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PROFESSOR OF PHYSIOLOGY, KING'S COLLEGE, LONDON.

## LECTURE II.[1]

*Delivered on April 30th.*

### REGENERATION OF NERVES.

MR. PRESIDENT AND FELLOWS,—The chemical meaning of nervous degeneration, to which I alluded in the first lecture, was studied by Mott and myself in correlation with the anatomical appearances which are observable by the microscope. We found it impossible to study this question without taking into account the closely related subject of nerve regeneration. From the microscopic study of the distal portions of divided nerve trunks we arrived at the conclusion that the activity of the neurilemmal cells has some relation to the development of the new nerve fibres. At any early stage in degeneration their nuclei multiply; later they participate with phagocytes in the removal of the broken-up myelin droplets; subsequently they elongate, and becoming connected end to end lead to the formation of what some have termed "embryonic nerve fibres." These three stages are illustrated by the drawings from micro-photographs shown in Figs. 6, 7, and 8. We

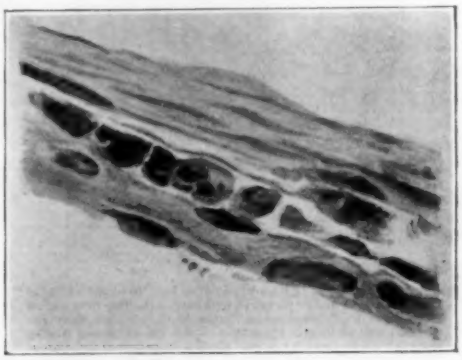
FIG. 6.

Degenerated nerve fibre in a cat's sciatic nerve eight days after the nerve had been cut, showing division of a neurilemmal nucleus. The preparation was stained with logwood, and the drawing is made from Mott's photomicrograph of the preparation by Miss Helen Kelley.

were, however, extremely doubtful whether this appearance really indicated the formation of real nerve fibres capable of conducting impulses, and felt that such incomplete observations could not be considered as serious objections to the view of those who, from Waller onwards, have taught that the axis-cylinder is a branch of a nerve cell which grows towards the periphery. In the further investigation of the problem, Mr. Arthur Edmunds joined Mott and myself, and we arrived finally at the conclusion similar to that which Howell and Huber reached 15 years ago, that, although the peripheral structures are active in preparing the scaffolding, the axis-cylinder which is the essential portion of a nerve fibre has an exclusively central origin.

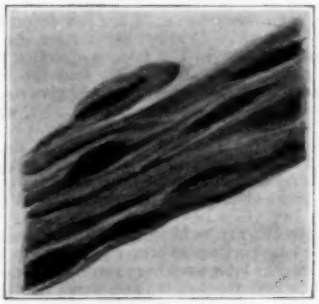
Before I present to you the evidence on which this conclusion is based I must allude first to the work of other observers, for since our investigation started the subject has risen into some prominence. Some workers, such as Purves Stewart and Ballance in this country and Bethe in Germany, have advanced the view that the new fibres have a peripheral origin, while others, such as Langley and Anderson and S. Ramon Cajal, have defended the older Wallerian doctrine. In a preliminary notice which we published a year or two ago of our own work we suggested that the manifest activity of the neurilemmal cells is related nutritionally to the successful repair of a divided nerve, for in situations like the central nervous system, where the neurilemma is non-existent, not only is the removal of degenerated myelin a very slow process but, as is well known, regeneration does not occur. When the nerve is regenerated and conducts impulses the strands of neurilemmal cells are seen to be situated outside the new axis-cylinder and in longitudinal view the latter is thus often concealed; but on transverse

FIG. 7.



Degenerated bundle of nerve fibres in longitudinal view in cat's sciatic nerve 27 days after the nerve had been cut. A chain of neurilemmal cells is seen filled with oil droplets (stained black by Marchi's reagent), and evidently exercising a phagocytic action in the removal of degenerated myelin. (Photomicrograph by Mott, drawing by H. Kelley.)

FIG. 8.



Longitudinal view of nerve fibre in cat's sciatic nerve 44 days after the nerve had been cut. By this time absorption of the degenerated myelin was complete and the neurilemmal cells have elongated and in parts joined end to end as described in the text. (Photomicrograph by Mott, drawing by H. Kelley.)

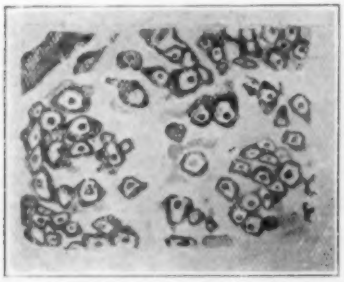
section the axis-cylinder is seen to be quite distinct within the sheath, although the neurilemmal nuclei retain an abnormal thickness for some time (see Fig. 9).

Professor Graham Kerr, in his recent study of the development of motor nerves, has in an entirely independent manner supported this view of the nutritional importance of the neurilemmal sheath. In the fish, *Lepidosiren*, that he has mainly studied, the early motor nerve fibres are at first naked, but later masses of nucleated mesenchymatous protoplasm apply themselves to the nerve trunk, and gradually spread over it. As development goes on the yelk in these masses is used up, their protoplasm becomes less and less conspicuous, and eventually is only to be detected in the immediate vicinity of the nuclei. It is thus clear that the great function of the sheath is as a nutritive organ. Kerr points out that the main function of nuclei apart from reproduction is to control cytoplasmic metabolism, and that the nuclei of the sheath are able to exercise this control over

[1] Lecture I. was published in THE LANCET of May 4th, 1907, p. 1207.

the active metabolism of the developing nerve trunk which is destitute of nuclei of its own. Connected with this relation is no doubt the active multiplication of these nuclei observed in early stages of nerve regeneration. Whether this control is able to act so far as to produce true nerve fibrillæ in a regenerating fibre, as Kerr farther suggests, I am inclined to doubt, for we have never seen anything of the nature of an axis-cylinder or neuro-fibrillæ in the peripheral segment of a divided nerve, provided connexion with the central end is successfully prevented. I am also unable

FIG. 9.



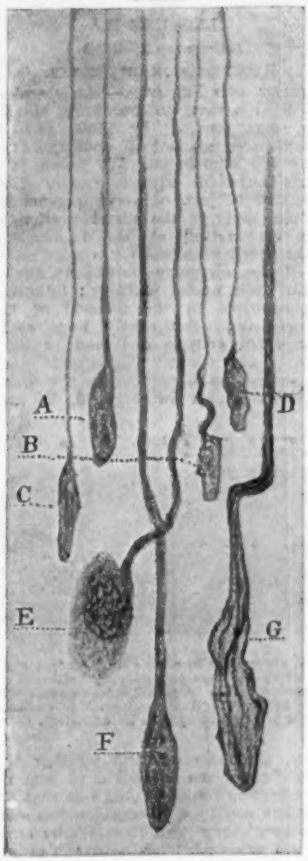
Transverse section of regenerated nerve bundle of cat's sciatic nerve 108 days after the nerve had been cut. The new nerve fibres are much smaller in diameter than those they replaced; the abnormal thickness of the neurilemmal nuclei referred to in the text is well shown in many of the fibres. The preparation was stained with logwood and photographed by Dr. Mott; the drawing from the photograph was made, as in preceding figures, by Miss Kelley.

to accept his view that the original nerve trunk exists from the first as a link which increases in length as the animal grows. It is impossible on such a hypothesis to explain how a gap an inch or more long can be bridged across when one excises, as we have done in some of our experiments, a portion of nerve of that length. The union that occurs often very rapidly, even when the ends are not sutured together, must be due to growth of nerve fibres from the central to the peripheral stump, or in the reverse direction. It is also on *a priori* grounds most improbable that the mesoblastic cells which make up the neurilemma could give rise to such a highly specialised structure as the axis-cylinder, which so far as is known is exclusively epiblastic in origin.

The propositions maintained by Waller—namely, the integrity of the central end of a cut nerve, the degeneration of the peripheral segment, and its regeneration by means of fibres growing out distalwards from the central stump—were questioned a few years later by Vulpian and Philippeaux. These observers cut nerves in various animals, mainly young ones, excising long portions to prevent union with the central end. Some months later they were surprised to find that the peripheral ends had regenerated and were excitable; to this phenomenon they gave the name of "autogenetic regeneration." These results were regarded with so much scepticism by most writers that some years later Vulpian repeated his experiments. He obtained the same results as before, but this time put forward a new explanation; in fact, he adopted the Wallerian doctrine because he found that connexion with the central nervous system had been re-established by means of fibres growing into the peripheral stump from other nerves in the neighbourhood. This connexion he had missed in his earlier work. He had also, with Philippeaux, observed regeneration in portions of a nerve transplanted under the skin of the abdomen, but as a result of his later work explained this in the same way.

In the revival of the controversy that has taken place within the last few years the position of the disputants has been almost exactly the same as that occupied by Waller and Vulpian more than half a century ago. The evidence which Ballance and Purves Stewart have advanced in favour of autogenesis is purely histological. In the absence of any proof that the so-called nerve fibres are excitable and capable of conducting impulses, I regard it as probable that these observers have mistaken for nerve fibres the chains of neurilemmal cells which undoubtedly form in the peripheral portions of divided nerve trunks. Bethe is at present the most prominent supporter of the autogenetic theory. He finds that the peripheral segments of cut nerves are in young animals after a time excitable without union with the central ends. He does not, however, exclude the fallacy which underlay the old experiments of Vulpian and Philippeaux and which has been more recently pointed out by Langley and Anderson. These observers showed that, in spite of any obvious connecting strand with the central end, new nerve fibres find their way, often by devious channels, into the peripheral stump from nerves in skin and muscle cut through in the operation. At the commencement of their work Langley and Anderson thought they had obtained evidence of purely peripheral regeneration, and it was not until they carried out careful dissections that they convinced themselves that union with the central nervous system had occurred in the manner just mentioned. They therefore

FIG. 10.




Olive-shaped swellings (A to G) at the ends of nerve fibres growing downwards from the central end, 21 days after the nerve had been divided. Differences in the external form of these swellings will be noticed (Marinesco).

once more cut the central portion of the nerve and of any other nerves which might possibly have established a connexion with the peripheral segment of the nerve they had under observation. The second operation would cause degeneration of the fibres which had established a central connexion and leave intact any fibres which had regenerated autogenetically. Even this was not always sufficient to prevent reunion once again of the peripheral end with the central nervous system. But in cases of success no autogenetically formed nerve fibres were found. From eight to 12 days after the second operation no sound medullated fibres were found in the peripheral end, and the nerve was quite

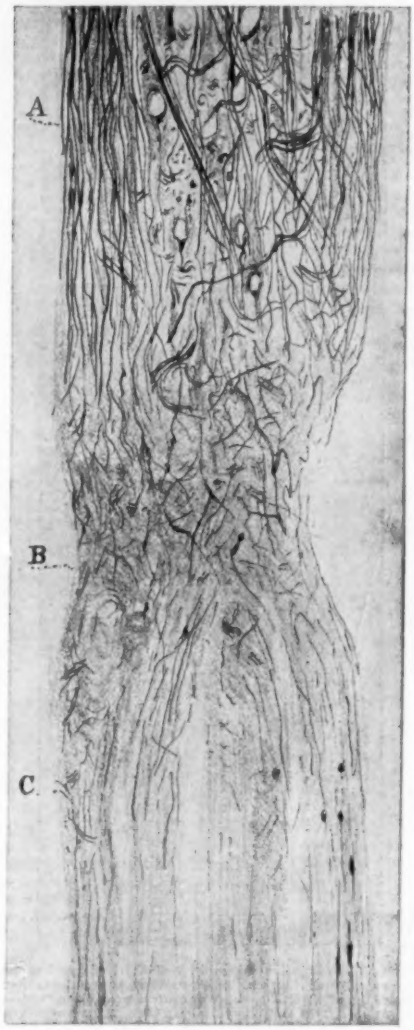
inexcitable. These experiments, like Bethe's, were mostly performed upon young animals—kittens and rabbits, and in some, after a period of nearly two years, no trace of autogenetically formed nerve fibres could be detected. All the medullated nerve fibres found in the peripheral end of a cut nerve, which had been sutured to the central end, degenerated when the central end was again cut nearer the spinal cord; in other words, all the nerve fibres were fibres which were connected with the central nervous system. If the regeneration had been autogenetic, this would mean that every one of them had become united with the end of

FIG. 11.

Spiral form often seen in regenerating nerve fibres. A, large myelinated fibre; B, fine fibre; C, fibre of intermediate size; M, terminal swelling of the fibre which has become contorted; N, group of terminal swellings. (Rabbit's nerve 20 days after section. Marinesco.)

a nerve fibre in the central stump; on the autogenetic theory this is highly unlikely, whereas it is quite simply accounted for on Wallerian lines. If the number of medullated fibres in the peripheral end was small then the connexion with the central end was found to be slight. If no connexion occurred, then medullated nerve fibres were entirely absent. Bethe admits a variability in the number of medullated fibres, and this again, though easily explicable on the view that such fibres come from the central end, is not accounted for at all by the autogenetic theory. Langley and Anderson further point out that Bethe admits age to be an important factor in the case; in adult animals he has little or no proof of autogenetic regeneration. This is a very weak point, for surely the difference is due to the greater ease with which reunion with central nerves occurs in young and growing animals. Lugaro objects to Bethe's views on much the same lines as Langley and Anderson, and in his latest paper has shown that regeneration of nerves connected with the lower part of the spinal cord does not occur after the lumbo-sacral region of the cord has been extirpated. This is a very striking piece of evidence on the dependence of the growth of fibres on the activity of the cells of the central nervous system with which they are connected. Cajal, from the histological point of view, has made a very complete rejoinder to Bethe's work. He has also controlled his results by noting the effect of stimulating the nerves. By the help of his new silver method he comes to the conclusion that the new formation of nerve fibres in the peripheral stump is exclusively due to growth from the central end. He describes the long and often contorted course of these growing fibres in the swelling at the cut central end, and shows that they ultimately reach their goal—the peripheral stump—in time, and in spite of all hindrances. The greater the obstacles

FIG. 12.



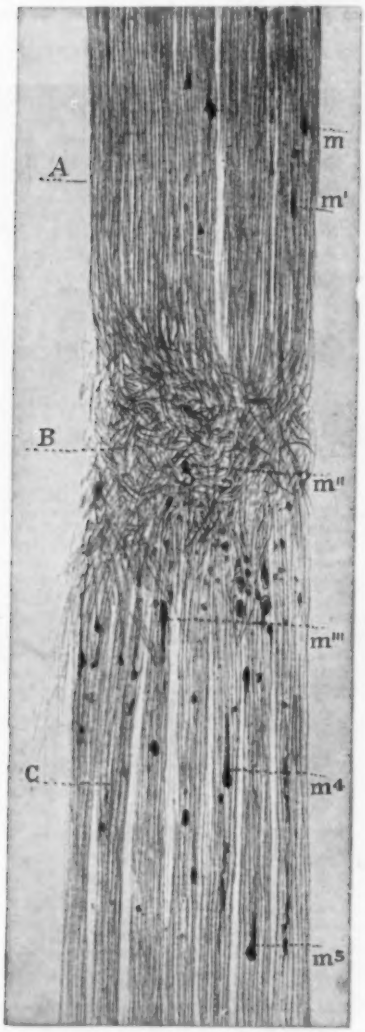

Longitudinal section of sciatic nerve of newly born dog, eight days after the nerve had been divided. Union had already taken place. At the extremity of the central end (A) growing fibres are seen running in various directions towards the cicatrix (B); C is the peripheral end into which a few fibres are already penetrating. (Marinesco.)

interposed the later do the union and consequent regeneration in the peripheral end occur. He also calls attention to the olive-shaped swelling at the free end of each growing axis-cylinder. These are also figured by Marinesco. I am indebted to the kindness of Professor Marinesco for the next

two figures. Fig. 10 illustrates the swelling at the termination of growing axons, and Fig. 11 the convoluted course of the new fibres which is so frequently seen.

Marinesco has passed through the phase so often seen in those who have attacked the problem of nerve repair. He was never a thorough believer in Bethe's views, but in his earlier publications felt obliged to admit that some of his

FIG. 13.




Longitudinal section of vagus nerve of dog 21 days after the nerve had been divided. A more advanced condition than that shown in Fig. 12. A is the central end, B the cicatrix of union where the new fibres are seen in great numbers, and taking an irregular course. Into C, the peripheral end, many fibres have already successfully penetrated. m, m', m m'', &c., are the terminal swellings of fibres growing from the central stump, and directed towards the periphery, except in the case of m'', where the twisting of the new fibre in its efforts to grow had at the time when the animal was killed directed the termination backwards. (Marinesco.)

preparations afforded evidence of auto-regeneration. In his last published paper he has recanted these views and is now convinced that auto-regeneration does not take place. I reproduce two very striking illustrations from the numerous figures which he has published. The preparations were stained by Cajal's new method and the reproductions (Figs. 12 and 13) require no comment; they speak for themselves, and ought to carry conviction to those who believe in the autogenetic theory that the Wallerian view is the only possible one to adopt. Marinesco does not believe that the neurilemmal cells act as phagocytes, but otherwise he ranges himself by the side of Cajal and ourselves.

Many surgeons have been steadfast upholders of the autogenetic theory, because they have found that in man (including adults, in spite of Bethe) sensation may rapidly return after freshening up and suturing together the ends of a nerve which had been divided a long time previously. Such clinical observations would be valuable evidence in favour of the "peripheral theory," if it were entirely trustworthy. Mr. Edmunds, then surgical registrar at King's College Hospital, had recently the opportunity of observing carefully one of these cases, and it throws a useful light on the subject. A short time after the operation the patient stated he was able to feel, but these sensations rapidly subsided, and sensation did not really return until months later. The preliminary sensations were doubtless subjective; the irritation of the nerve fibres in the scar lasted some hours, and the sensations so produced were referred by the patient's mind to the original terminals of the fibres.

At the meeting of the British Medical Association in Oxford in 1904 Dr. R. Kennedy of Glasgow brought forward a number of cases in support of the autogenetic theory. Here, again, the genuineness of the early recovery is doubtful, because no care appears to have been taken to distinguish real cutaneous from deep sensibility. Head and Sherren have also recorded a number of surgical cases, but they found no evidence of early recovery; they showed by very careful work that the deep sensibility of the subjacent parts, such as would be excited by the pressure even of the finger, is entirely independent of cutaneous sensation. The fibres subserving this form of sensation run with the motor nerves and are not destroyed by division of all the nerves to the skin. The difficulty of obtaining absolutely trustworthy evidence from patients themselves induced Head to combine with his experiments on animals and his observations on patients an experiment on one of the sensory nerves of his own arm. This experiment gave an opportunity for the study of the phenomena by a trained observer upon himself. He certainly experienced no early return of function, and the date at which sensation did come back coincides closely with the dates obtained in animals by physiologists for the reappearance of new fibres. He has further made the interesting suggestion that the first kind of sensation to return and which is of a vague nature (termed *protopathic*) is associated with the activity of the fine medullated nerve fibres which replace the degenerated ones at an early stage. Return of protopathic sensibility begins about the eightieth day. The more elaborate sensations and power accurately to localise them return at a much later date, and this *epicritic sensibility*, as Head terms it, is usually not perfect until months or even years after the regeneration started. By this time, as was shown by experiments on animals, the fine nerve fibres which subserve protopathic sensation are largely admixed with a later growth of larger nerve fibres, and he believes epicritic sensation is subserved by these.

After this long introduction let me now pass on to describe the experiments which have been carried out by Mott, Edmunds, and myself. Every piece of confirmatory evidence is useful if the upholders of the autogenetic theory are to be convinced they are wrong. In some directions, moreover, our experiments have approached the problem in rather a different way from that followed by other workers. I will arrange what I have to say under five headings:—

(1) *Experiments in which union of central and peripheral ends was prevented.*—We had noticed early in the investigation that the excision of an inch or so of a nerve was entirely inefficient to prevent union of its two ends together; we were also aware of the danger (pointed out by Vulpian in his later work, and by Langley and Anderson, and Lugaro more recently) that the peripheral end may be invaded by nerve fibres growing into it from the nerves in skin and muscles divided in the operation. We therefore made extremely small incisions, and the parts were separated from the nerve trunks by the handle of the scalpel, and with as little cutting as possible. In cats one incision over the buttock allowed us to divide the sciatic nerve high up; another in the ham enabled us to divide the two popliteal nerves. The intervening portion of the sciatic nerve, about

four or five inches long, could then be easily pulled out. Additional security to prevent union with central fibres was in some cases obtained by inclosing the upper end of each popliteal nerve in closed caps made out of small sterilised drainage-tubes about half an inch long. A period of from 100 to 150 days was then allowed to elapse in order that if regeneration was going to occur in the peripheral segments of the nerve it might have an opportunity of doing so. At the end of this time the animal was again anæsthetised and the nerves were tested by electrical stimulation. In all cases they were entirely inexcitable to strong faradic currents, and the wasted muscles supplied by these nerves had also largely lost their power of response to this form of stimulation. To the naked eye the nerves were pale. The animals were then killed and the nerves subjected to microscopical investigation, but they were found to show no trace of regeneration. The chains of neurilemmal cells, without a sign of either axis-cylinder or medullary sheath, were all that could be seen, and in those cases of later date where the nerves had been placed in tubes it was very difficult to recognise any nervous structure whatever in the pieces actually inclosed within the tubes.

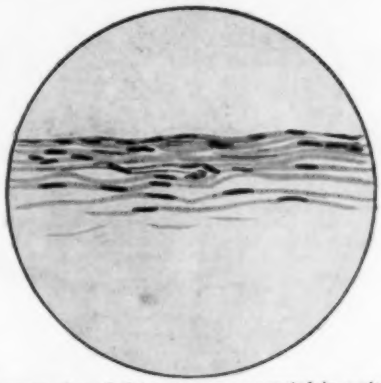
(2) *Experiments on transplanted pieces of nerve.*—As I have already stated, Vulpian and Philippeaux transplanted pieces of nerve under the skin of the abdomen and observed in them what they at first thought was evidence of autoregeneration, a conclusion subsequently withdrawn by Vulpian. Similar experiments, recently published by Kennedy, are regarded by him as proving absolutely conclusively the autogenetic origin of nerve fibres. He excised a portion of the sciatic nerve and transplanted it into the subcutaneous tissues of the same animal. Six months later he killed the animal and examined the nerve which had been transplanted. He found among a number of degenerated fibres some which were definitely formed with a medullary sheath showing distinct nodes of Ranvier. He concluded that these fibres had been formed by the tissues of the excised portion of nerve. He conceives objectors to this deduction maintaining that these nerve fibres have grown into the sheaths of the transplanted nerve from cutaneous nerves divided in the course of the operation and meets this objection as follows:—

> Such an explanation is, I think, far-fetched, and assumes an extraordinary affinity between the supposed young nerve fibres and the old nerve trunk, an affinity which, if established, would, I am sure, secure almost certain spontaneous union of nerve trunks after division, unless very extraordinary barriers were placed between the divided ends.
>
> The number of cases, however, in which secondary suture has to be performed shows that divided nerves cannot be confidently left to Nature to repair, which I am sure might almost uniformly be the case did such strong affinity between young nerve fibres and the distal degenerated segment exist.

It has, however, been shown that a large nerve trunk on division curls up at the end, forming a contorted leash of fibres. Further, a nerve trunk on division retracts and a considerable amount of scar tissue is formed. This cicatricial tissue by the time the nerve has begun to regenerate has become dense fibrous tissue. In the case of nerve trunks, therefore, "extraordinary barriers" are the rule. Moreover, in spite of such barriers, spontaneous union often occurs, and in animals when the cut is made more cleanly than occurs in an accident in man and when antiseptics are used, the amount of cicatricial tissue formed is less and union may be confidently anticipated without suture, either immediate or secondary. In the case of small nerve trunks the case is also different; for example, after operations involving extensive skin incisions anæsthesia is always found on one side of the incision, varying in extent according to the direction of the incision and the number of cutaneous nerves divided. It is, however, the rule for these anæsthetic areas to recover completely.

Again, when a longitudinal incision is made through the rectus abdominis muscle, it is very rare to find any permanent paralysis of portions of the muscle, although division of its nerves must be very common. Temporary paralysis, of course, must take place, but there is so little fear of ultimate paralysis and atrophy of the muscle that many surgeons prefer an incision through the rectus to any other method of performing laparotomy. To study this point further we repeated Kennedy's experiment, with the variation that a portion of a nerve was not only inserted underneath the skin, but a similar portion was inserted into the peritoneal cavity. The portion of sciatic nerve which had been previously removed from the same animal was laid on the anterior stomach wall. A row of Lembert sutures of catgut was then passed so as completely to inclose it in a sheath of stomach wall lined by peritoneum. In this way there was no possibility of nerve fibres growing in from the skin, and but little possibility of their coming from the stomach. As a control experiment a wisp of catgut was enveloped in the stomach wall in a precisely similar manner. After 150 days the animals were killed and the nerves examined. In those cases where the nutrition of the nerve had been effectually maintained the nerve could be readily seen both in the stomach wall and under the skin. It was thinner and more transparent than when it was inserted. It was examined in teased specimens and in sections. Each fibre looks like a long tube; there is no trace of a medullary sheath, neuro-fibrillæ, or axis-cylinder. At the point where the nucleus is situated there is usually no increase in the diameter of the fibre, the nucleus being either central or projecting into a central lumen. In some fibres, on the other hand, there is a distinct swelling at the site of the nucleus and a considerable amount of protoplasm accumulated around it. These appearances are illustrated in Figs. 14 and 15. They are merely those which have been so often described in the peripheral segment of a divided nerve in which regeneration has not occurred and which all observers agree are due to neurilemmal activity.

FIG. 14.



Low power view of the appearances presented in a piece of nerve transplanted into the peritoneum 150 days previously. (A. Edmunds.)

FIG. 15.

Higher power view of two of the fibres. (A. Edmunds.)

In cases where the nerve had been transplanted under the peritoneum, in which situation invasion by neighbouring nerves is nearly impossible, no medullated fibres could be found. In those cases where the nerve was transplanted under the skin careful search revealed the presence of a few medullated fibres. It is difficult to explain the paucity of these fibres on Kennedy's hypothesis that they have formed autogenetically, seeing all the fibres were under precisely the same conditions; but it is easy to account for it if our

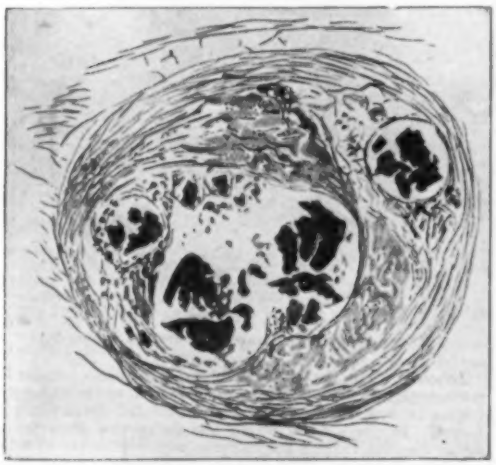
view is adopted that the well-formed fibres were a few stray ones which had grown into the transplanted bundle from nerves cut through in the operation. The next figure (Fig. 16) illustrates how a blood-vessel breaks through the sheath into the substance of a degenerated nerve bundle, and from this it is a very small step to the irruption of nerve fibres into the interior of a transplanted nerve. The connective tissue between and around the bundles of nerve fibres retains its normal relationship but any structure of a similar shape becomes inclosed in a fibrous sheath unless it is completely absorbed. This is well illustrated in Fig. 17, which shows a transverse section of a strand of catgut which had been enveloped in the stomach wall; the connective tissue is seen to be organised around the catgut threads, forming a framework which strongly suggests the sheath of nerve fasciculi. Marinesco has shown that if a transplanted nerve is obtained from another species of animal (hetero-transplantation) it does not undergo the usual Wallerian changes, but is completely necrosed, just as the blood corpuscles of one animal are destroyed by the body fluids of another. The surgical method sometimes adopted of employing an animal's nerve to assist the regeneration of an excised portion of nerve in man is, therefore, rather a hindrance than a help.

FIG. 16.

A small blood-vessel entering the sheath of a fasciculus of transplanted nerve, as described in the text. 280 diameters. (Drawn by Miss Kelley from Mr. Edmunds's preparation.)

(3) *Experiments on the degeneration of regenerated fibres.*—We performed these experiments at the suggestion of Professor Gotch. A large nerve was divided in an animal and the ends were sutured together with sterilised silk. After a sufficient length of time had elapsed restoration of function led us to suppose that regeneration had occurred. A second operation was then performed in each case. The animal was anæsthetised and the nerve was exposed; the union of the two ends was found to have been accomplished and the nerve was excitable both above and below the junction. A piece of nerve about half an inch long was then excised an inch or so below the junction. On histological examination of this all traces of degenerated products were found to have disappeared and it was made up of fine nerve fibres, many of which had acquired a delicate medullary sheath. After this second operation the wound was closed and the animal allowed to live ten days longer; it was then killed and the nerve both below and above the second cut was examined. No degeneration was found in the nerve fibres above the second lesion, but Wallerian degeneration was shown by the Marchi method to have occurred in the medullated fibres of the peripheral portion which was quite inexcitable. The direction of degeneration is the direction of growth, so this experiment shows that the growth of the nerve fibres had not started from the periphery centralwards but in the reverse direction. Fig. 18 is from a drawing of the degeneration seen in a teased preparation of the peripheral segment after the second operation.

FIG. 17.



Transverse section of strand of catgut which has become surrounded by a sheath of connective tissue after being transplanted to beneath the peritoneum as described in the text. (A. Edmunds.)

We noted an interesting point in these experiments which illustrates the great rate at which the regenerating fibres grow. Although only ten days had elapsed between the second operation and the killing of the animal, and although quite half an inch of nerve had been excised and no efforts made to approximate the ends, yet there was usually a well-marked strand of union uniting the two segments. We think that these experiments, taken in conjunction with the somewhat similar experiments already alluded to in the work of Langley and Anderson, in which, after union of the two ends of a divided nerve, degeneration in the regenerated fibres sets in after a second operation of dividing the central end of the nerve nearer the spinal cord, conclusively prove the regenerated fibres to be in anatomical continuity with the fibres in the central end, and so with the central nervous system. They thus serve to prove the doctrine that the regenerated fibres have grown from those in the central stump. At the time that we undertook these experiments we were under the impression that they had never been previously performed. But on looking up the literature we find this is not the case. Like so much of the present work set

going by the revival of the autogenetic theory this experiment has also been performed by others. As long ago as 1859 Philippeaux and Vulpian did it and obtained the same result as we have; we can hardly doubt that this formed one of the factors that later led Vulpian to abandon the autogenetic theory.

FIG. 18.

Wallerian degeneration of regenerated nerve fibres in a cat. Marchi method of staining. 320 diameters. (Drawn from a teased preparation made by Dr. Mott by Miss Kelley.)

(4) *Experiments on the rate of medullation in regenerating nerves.*—Another very important piece of evidence which supports the general view I am advocating was obtained by examining regenerated nerve fibres in various parts of their course. There is always a noticeable difference between the amount of medullation in the regeneration of motor and sensory nerves, that in the latter advancing more rapidly. It was therefore necessary for us to examine the same bundle of fibres in different parts of their course. In specimens obtained from 80 to 90 days after the nerve had been cut the peripheral portions near the junction contained numerous myelinated fibres, whereas some inches lower down myelination was less distinct and the number of fibres which had been invested with a medullary sheath much fewer in number. We illustrated these appearances by coloured drawings in our paper recently read before the Royal Society. It can hardly be doubted that the medullary sheath is a developmental appendage of the axis-cylinder; it appears in the fibres of the central nervous system, where the neurilemma is absent; it degenerates with the axis cylinder when a nerve fibre is cut and completeness of function is associated with its appearance in development and with its reappearance in regeneration. I therefore think we are justified in concluding that the late appearance of this sheath in those portions of the regenerating fibres which are most distant from the place where the nerve was originally cut is a conclusive piece of evidence in favour of the view that the new nerve fibres have grown from the central end in a peripheral direction.

(5) *Experiments on the influence of stimulus on regeneration.*—These experiments were performed on rhœsus monkeys. A monkey's arm was rendered immobile by the division of a number of the upper posterior roots on one side. In order to be perfectly certain we usually divided from the second cervical to the second or third thoracic roots inclusive. The anterior cornual cells from which the corresponding motor fibres originate are thus not subjected to stimuli from the periphery, and, as Mott and Sherrington were the first to show, the arm is as much paralysed as if the anterior roots had been cut. We, however, again noticed in some of these animals under the influence of strong emotion that some efforts were made to move the paralysed limb. These efforts are ineffectual and are limited to associated movements in the upper segment of the limb; fine movements were never noticed. When the animal is living in its cage under ordinary conditions it makes no effort to move the limb, which, when a sufficient number of roots have been entirely cut through, hangs helpless like a flail. After the healing of the neck wound produced by the cutting of the posterior nerve roots was accomplished, a matter usually of one or two weeks, a large nerve in the arm was then divided and the ends were sutured together. The corresponding nerve was cut and sutured on the non-paralysed side as a control experiment. The animal was finally killed; the interval between the operation and death varied in different experiments, but the best time for making the observation we finally determined to be between 60 and 70 days after the nerves had been cut. This is a date when regeneration is perfectly evident, but not too far advanced; it therefore permits of comparative observations on the amount of regeneration. Union of the divided nerves occurs on both sides of the body and in our early experiments the nerve on the side corresponding to that on which the posterior nerve roots had been divided was found to be the less excitable to the faradic current. Histologically this nerve showed a looser texture and new nerve fibres, though present, were less numerous than on the control side. In these early experiments also we found that the posterior cornual cells in the cervical region were atrophied and that there was a considerable overgrowth of neuroglia tissue in the posterior horn. Further examination of these spinal cords showed, however, that there had been a considerable number of small hæmorrhages, sufficient in some cases to cause degeneration in various descending tracts in the cord. It therefore became quite possible to explain the effects observed by this complication.

In several of the later experiments in which cord hæmorrhages did not occur to any great extent we have been unable to detect any marked changes in the anterior or posterior cornual cells, or any difference to stimulation or in microscopic structure between the regenerated nerves of the two sides. This conclusion fits in with some experiments of H. K. Anderson. He showed that in developing animals section of all the posterior roots connected with a limb exercised no retarding influence on the development of the corresponding anterior roots. Warrington has stated that when posterior nerve roots are cut the anterior horn cells undergo the chromatolytic change associated with inactivity; after some time (from 30 to 74 days) chromatolysis disappears, but the total number of cells on the side of the lesion is lessened; after periods of from 150 to 223 days from the initial lesion the wasting of the grey matter is very marked. We have never observed these changes even although in one case the cord was examined in an animal killed 17 days after the division of the roots. At any rate, it was not possible by looking at the anterior nerve cells of the two sides to tell which was the side on which posterior roots had been divided. In further experiments we sought to cut off the cerebral influence by removing the cortical arm area of the opposite side in addition to dividing posterior roots. In this case also the regenerated nerves of the two sides were equally responsive to stimulation, and histological evidence of any marked difference between them was also lacking.

Finally, we still further reduced the action of innervation currents on the anterior cornual neurons by cutting off the stimuli which enter by the posterior roots as well as those which descend from the brain. The latter was accomplished by combining either a semisection or a complete transection of the cord in the mid-thoracic region with the division of the posterior nerve roots which correspond to the lower limb of one side. The two sciatic nerves were then divided and sutured and, as before, an interval was allowed to elapse until these nerves regenerated. Here, again, the result was negative. Both nerves regenerated equally well and both were equally responsive to excitation. It is, therefore, quite evident that the paths which even in these circumstances remain open (commissural and association tracts) are sufficient to maintain the activity of the anterior cornual cells in the sprouting forth of new axons in a peripheral nerve although they may be insufficient to induce those cells to send effective impulses along them. It is also evident that in order to reduce the activity of the anterior nerve cells to a sufficient degree to prevent the regeneration of their axons,

it would be necessary to insulate a group of them so as to prevent all impulses reaching them from every part of the nervous system. We did not see our way to accomplish such an operation without interfering with the blood-supply of such an island of cord matter. The nearest approach we have obtained to such a condition of things is to be found in those early experiments in which hæmorrhages and neuroglial overgrowth occurred as a complication. Here certainly the diminution in the number of regenerated fibres points to a reduced activity or, it may be, destruction of some of the anterior cornual elements, but in either case these experiments, so far as they go, are in favour of the view that new nerve fibres grow from central axons and are not formed autogenetically.

### GENERAL CONCLUSIONS.

I put forward the foregoing five sets of experiments as a contribution to the discussion now in progress as to whether the regeneration of nerve fibres is autogenetic or not. These experimental methods approach the subject in different ways and in no one case was any evidence forthcoming of auto-regeneration. The facts recorded, taken in conjunction with those published by such observers as Cajal and Langley and Anderson, form, on the other hand, strong pieces of evidence in favour of the Wallerian doctrine that new nerve fibres are growths from the central ends of divided nerve trunks. The experimental facts recorded by those who, like Bethe and Kennedy, hold the opposite view are susceptible of easy explanation, mainly on the lines emphasised by Langley and Anderson of accidental and unnoticed connexion of the peripheral segments with the central nervous system by means of other nerves cut through in the operation. If such connexion is effectually prevented real regeneration of structure and restoration of function never occur. Moreover, the regenerated fibres always degenerate in a peripheral direction, and in a peripheral direction only, when the link that binds them to the central nervous system is again severed. Perhaps the most striking of the new facts I have mentioned is in reference to the development of the medullary sheath; this appendage of the axis-cylinder appears earliest at situations near the point where the ends of a nerve have been joined together and reaches the distal portions later. What takes place in the peripheral segment of a divided nerve is a multiplication, elongation and union into long chains of the neurilemmal cells. The same change is even more vigorous at the central termination of the cut nerve; and the view of the phagocytic and nutritive function which we attribute to this sheath has been supported independently by some striking observations of Graham Kerr to which I have fully referred. At the central end this nutritive function is effective and provides for the nourishment of the actively lengthening axis-cylinders. At the peripheral end, unless the axons reach it, it is ineffective in so far as any real new formation of nerve-fibres is concerned. If, however, the axons reach the peripheral segment the work of the neurilemmal cells has not been useless, for they provide the supporting and nutritive elements necessary for continued and successful growth. The neurilemmal activity appears to be essential, for without it, as in the central nervous system, regeneration does not take place.

*Note.*—Since this lecture was prepared for publication Dr. Bethe has sent me a copy of his latest paper on regeneration (*Pflüger's Archiv*, vol. cxvi., p. 385, 1907), in which he defends his views. He now admits that in adult animals no regeneration of medullated fibres occurs autogenetically; he does not, however, state at what age animals lose their power of autogenetic regeneration or explain how it is that after a certain date an animal repairs a divided nerve in the exactly contrary manner to that it would have adopted if the nerve had been cut before that date. He also again admits that a regenerated nerve when cut degenerates in a peripheral direction only but denies that degeneration has anything to do with direction of growth. He further states that on one or two points we had misquoted him in our Royal Society paper; for this we can only express our regret and in the present lecture I have rectified the error. The paper is largely polemical and is directed against Cajal, Marinesco, and others as well as ourselves. I can, however, find no fresh work in it sufficient to convince me that autogenetic regeneration of nerve ever takes place.

*Bibliography.*—The chief references to the original work done on this subject are given in a paper by Mott, Edmunds, and myself in the Proceedings of the Royal Society, B., vol. lxxviii., 1906, p. 256. The principal papers which have since appeared are the following: E. Lugaro, Neurologisches Centralblatt, vol. xxv., 17, p. 786; G. Marinesco, Jahrbuch für Psychologie und Neurologie, vol. vii., p. 141, 1906; Perroncito, Bollettino della Società Medico-Chirurgica diu Pavia, 1905. All three papers defend the Wallerian doctrine. The following paper by Warrington, Journal of Physiology, vol. xxx., p. 503, 1904, was not mentioned in our Royal Society paper. Braeunig: Archiv für Anatomie und Physiologie, Physiologisches Abtheil, 1903, p. 251, confirms Warrington's views.

# A Lecture

ON

# THE CAUSES OF CARDIAC MOTION AND DISORDERED ACTION.

*Delivered at the London Post-Graduate College and Polyclinic*

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GENTLEMEN,—It appears to me that we may occasionally with profit devote a certain amount of time to an inquiry into the "causes of things" and I shall venture, with, I hope, your acquiescence, to go even further and say that such a procedure is often of practical utility. Thinking so myself, I propose in this lecture to deal with certain facts and opinions which in recent times have materially altered the view which some take of the nature of disorders of cardiac motion, although I do not find myself able to subscribe in their entirety to some of these notions, if I have apprehended them aright.

The heart, like every other organ exercising a particular function, is built on an essentially tripartite basis. We have a cell having properties peculiar to itself, blood which nourishes that cell, and nerves which "govern its action," to use the conventional phrase. The central nerve cell itself may be said to have afferent and efferent processes, of which the former may be regarded as its essentially stimulating "nerves," having their roots in living matter and connecting life with life throughout the body—life touching life through the central nervous system as blood flows through its channels from and to that organ which Harvey likens to the sun of our world in perhaps the finest chapter of his immortal work. So, also, the roots of action or motion, as a whole, may be said to be in "feeling" or in "irritability," if you prefer that term, and the senses of the body corporate may be held to touch the sources of "life" in the midst of that "Nature" in Which and by Which or Whom all living things "move and have their being." If one of the factors in this tripartite combination suffer, the others of necessity suffer more or less with it, for the functional activity of the organ depends upon their duly balanced and harmonious coöperation.

I do not suppose this position is seriously assailable, but thought, as directed to the point, has tended at one time to ascribe the major influence to one factor and at another to another. The blood as a medium common to the two others, and without the nutritive influence of which neither of them could exercise any function long, has entered of late less into the controversy as playing a predominant rôle in the exercise of particular function than the other two, and even as regards these their own sphere is sufficiently evident, except in a borderland of detail in function which some regard as chiefly exercised by the cell and others by its nerve-supply. The controversy, that is, as affecting the heart, lies chiefly between so-called myogenists, who advocate the claim for preponderant action to the muscle cell in the heart, and neurogenists, who claim that details in the function of the cell are chiefly dependent upon the nervous influences brought to bear upon that essential factor. We may, therefore, direct attention in the first place to the claims of the muscle cell.

It is unnecessary and would be quite out of place on this occasion even to attempt to sketch the evolution of thought as regards the character of muscular action in the heart. It is as old as direct observation of the active organ. Knowledge of the sequence of auricular and ventricular action and of the contractility of small detached segments of the heart is as old as Harvey. To come to later times the arrangement of muscular fibres in the heart has been more minutely

examined (among others) by Professor J. Bell Pettigrew and his dissections of the boiled organ may still be seen in the Museum of the Royal College of Surgeons of England in Lincoln's Inn Fields. At the present time there is no one in this country who has more fruitfully directed attention to the anatomical study of the heart than Professor Arthur Keith of the London Hospital, to whom I am indebted for the opportunity of showing you specimens bearing upon some points in this lecture, and some of whose illuminating papers have been published in THE LANCET.

Careful and elaborate as were Professor Pettigrew's dissections they did not show a direct continuity between the auricular and ventricular musculature. This was until comparatively recently undiscovered and not until still later was its complete anatomy known, if, indeed, we can even now regard that to be the case.

The researches of Stanley Kent, His junior, Retzer, Breunig, Tawara, and Keith have shown in considerable detail that a peculiar system of muscular fibres connects the auricles and ventricles by a route of perfect continuity. It is present in all vertebrate animals and is even found in the embryo, but it is very well developed in the sheep and in the calf, in which, as Professor Keith has remarked, it may be seen with almost diagrammatic distinctness. This muscular tract arises in the right auricle below the coronary sinus, passes along the right side of the septum auricularum, dives below the septal cusp of the tricuspid valve, and divides into two main branches at the auricular end of the septum ventriculorum. There the right branch courses down the right side of the septum to be generally distributed to the walls and papillary muscles of the cavity, and the left, piercing the fibrous membrane, passes over the top of the septum into the left ventricle, entering that chamber at the base of the non-coronary cusp (as Keith conveniently calls it) of the aortic valve, and, as in the right ventricle, is generally distributed over the surface of the chamber and into its papillary muscles. The fibres of this system differ from the usual type of cardiac muscle fibre. They are smaller and paler than the latter at their commencement and have smaller nuclei, become larger and merge into the peculiar cellular system of so-called Purkinjean fibres at a later point in their course, and, as Tawara has shown, ultimately end in cardiac muscle fibres of the ordinary type. Some bands in the ventricles hitherto regarded as tendinous are now known to be strands of pale muscle belonging to this system. Purkinje first noted fibres of the type called after his name in 1845, but these were regarded until recently as embryonic remains or pathological products. I think it is not too much to say that we have now a clear conception of their anatomical relations, although much observation is still needed to settle important points in their physiological function and the mechanism by which this is exercised.

Peculiarity of anatomical organisation argues a corresponding specialisation of physiological function, and Hering and others, including Erlanger, have shown that section or clamping of this so-called bundle of His has the effect of dissociating the regular sequence of auriculo-ventricular contraction. Hence it has been assumed that the function of this system of muscular fibres is to conduct the stimulus to contraction from the auricles to the ventricles, and hence also that alterations in the auriculo-ventricular rhythm are frequently due to disturbances or interruptions in the course of these muscle fibres, which thus manifest the property of "conductivity," as it has been termed, to distinguish it from the neural transmission of impulse. It is to Gaskell in this country, to whom we also owe so much of our knowledge of the nervous endowment of the heart, that we are chiefly indebted for the present conceptions of this among other properties of the cardiac muscular fibre, and Englemann in Germany has given powerful support to these views.

Conductivity is only one of the properties inherent in cardiac muscular fibre, according to the view now held by some observers. The other essential properties are the independent power to build up a "stimulus" to contraction which enables the muscle cell, by its likewise inherent "excitability," to manifest its "contractility," its regularly repeated contraction or "rhythmicity," and its degree of average contraction, "tone," or "tonicity," as myogenists term it. The muscle cell is thus assumed to have excitability, contractility, rhythmicity, conductivity, and tonicity, which constitute its five-fold independence. These terms are not in themselves new, but their independence of nerve influence has of late been emphasised. Like all other muscle, the fibres of this system are, however, endowed with nerves, although details in their innervation still demand research. But it is assumed that, while the nervous system "controls" their action, it is no more the cause of any of their activities than, as Professor Wenckebach (one of the most ingenious exponents of this myogenic theory) declares, the action of the horseman in manipulating the reins is the essential cause of the various manœuvres and condition of the horse itself.

The arguments employed in the establishment of this independence of cellular organic action have varied, as scientific theories are bound to vary, in the light of fresh facts. It was argued at one time that certain rhythmically acting organs, or portions of organs, were devoid of peripheral nerve cells and even of nervous endowment. The later discovery, however, of these structures in such situations has altered conceptions built upon this assumed nervelessness. But, even now, there is in some instances a vague ascription of a merely trophic value to the nerve-supply in such situations, or a definite limitation of nerve influences to a strictly regulating rôle, as distinguished from one in which they may be regarded as productive of stimulus, excitability, conductivity, and tone in the individual cell. Divergent as these views apparently are, it seems not unreasonable to expect that the truth will be found to lie in a compromise between them and that some of the properties of the muscle cell may be found to be more dependent upon nervous influence than is at present thought to be the case. Indeed, there are not wanting signs that such an enlargement of view has already begun. The nervous system, which lay dormant in the myogenic description of cases for a time, plays a considerable part, for example, in the account of a case of bradycardia published by Dr. John Hay and Dr. Stuart A. Moore in THE LANCET.[1]

I am not aware that it has ever been urged that the power of the visceral muscle cell to manifest contraction and the cessation of contraction—that is, contractility—is in the first instance due to the influence of the nervous system any more than that the secretory power of any glandular cell is owing primarily to such influence. But experimental physiology has amply proved that the functional activity both of the cardiac cell and of glandular cells may be modified by the action of the nervous system, and the question arises whether the attribution to a cell of a complex of independent properties is not really the multiplication of one essential property through the influence of the nervous system into the several properties which serve to explain its various conditions.

The anatomical argument for the independence of the cardiac cell in its complex aspect is drawn in the first instance from embryology. His showed that rhythmical action could be observed in cardiac muscle at a time prior to its endowment with nerves. This would doubtless be a strong argument were we certain that this embryonic rhythmicality was really quite devoid of nervous influence. We must remember that if nerves have not actual touch of the muscle, when it first exhibits the property in question they are, nevertheless, like the muscle itself, in process of growth, and not only so, but that the nerves are growing in a direction which will ultimately carry them to the cell. Is it not possible that they may in these circumstances exercise an influence from a distance upon nascent muscle through the medium of the evolving structures and the nutrient fluid in which the parts grow, on some such principle as the transmission of messages by wireless telegraphy to a recording surface? It may be objected that such a notion is merely fanciful, and I readily admit that it is so, but it must also be remembered that embryology is a matter of anatomical observation, not of experimental physiological research, and it is difficult to imagine that it can ever be otherwise. But, it may be urged, that whatever doubt there may be on this point there is none about the orderly auriculo-ventricular contraction of the eviscerated heart—of the heart detached from the central nervous system, and it may be maintained that reflex actions carried out by peripheral portions of the nervous system are against the finding of the experimental physiology of the moment.

There are some considerations which appear to call in question the finality of the above conclusion. Thus, there appears to be a relation between the constancy or degree of rhythmical muscular action in the viscera and the character of their nerve-supply. The heart and intestines, for example,

[1] THE LANCET, Nov. 10th, 1906, p. 1271.

which are constantly rhythmical, are richly supplied with peripheral ganglionic cells in their nervous endowment, while the uterus, an organ in which rhythmical action is chiefly manifested for only a short period during parturition, so far as I have been able to ascertain by personal investigation, is quite devoid of such cells on the nerve trunks which course through the organ, although it is in connexion with the sympathetic system by extra-uterine ganglia. To ascribe a merely trophic influence to the peripheral ganglionic cell does not carry us much farther, nor does it convince us that there is not a certain autonomy in the peripheral nerve cell, even although, like delegated authority generally, its permanence or persistence may be dependent upon a more central organisation. It does not therefore follow, I would submit, from a more exact knowledge of the muscular structure of the heart that the rôle of the nervous system is merely that of regulating the action of the muscle cell, excited in various degree by a self-generated stimulus. The importance of this conclusion, if correct, for a just estimate of the nature, causes, and treatment of motor disturbances of cardiac action cannot be disputed. Erlanger has shown that the clamping of the band of His interrupts more than muscular conductivity. It also interrupts when complete the transmission of nerve influence by way of the vagus and what is true of this experiment is doubtless also true of that in which the tract is divided by the knife. Due weight must, however, be given to the important observation made by Hering and other physiologists that it is division of the tract at the auriculo-ventricular boundary and not section of the heart muscle elsewhere which results in the dissociation of auricular and ventricular contraction.

The five-fold qualities or properties of cardiac muscular action are taken to denote a similar variety of conditions of the muscle cell and the myogenic view is that these properties must be regarded as independent of one another. That is, that one or more may be increased or diminished as the case may be without the rest being affected. Thus stimulus production may be diminished while excitability is increased or average, and the latter may be altered without conductivity and contractility being changed.

It is not disputed by the most convinced myogenists that the nervous system may inhibit or increase one or all of these properties of the muscle cell, but the essential participation of the nervous system in the production of conditions of which these manifested properties are a result is denied by them. Inasmuch, however, as we are still ignorant of the nature both of the so-called muscle stimulus and of nervous influence, it follows that dogmatism on this point, either from the myogenic or neurogenic standpoint, is out of place, while any heat of controversy on the subject is as irrational as the *odium theologicum*. It is rather an interesting scientific question in the discovery of the truth of which all are concerned, because, to quote an old saw, "knowledge is power," and, as practical physicians, all interests us which we can utilise in the management of disordered function. The myogenic position is, however, more difficult to establish in some respects than the neurogenic because the stimulus and its consequences are sought by the myogenist in one and the same structure, while the registration of the effects of nerve stimulation are seen not in the nerves but in the organ innervated. The behaviour of the heart may be noted as a consequence of stimuli applied to its nerve-supply and, as a matter of fact, we do know, as I have already stated, that the action of the cardiac muscle may be retarded, hastened, augmented, and depressed through the direct agency of the nervous system, the importance of which fact, for practical purposes, cannot be gainsaid whatever names may be applied to the various phases in the complex muscular states, which the myogenist regards as acting automatically.

Did the inherent possibility of certain conditions arising not exist, naturally they would not arise. That a strip of muscle detached from the body and variously treated by stimulating or relaxing agencies should show evidence of what is called tone or tonicity or of relaxation, which seems not yet to have been termed relaxicity but depression of tonicity, appears no more marvellous than that water should harden under cold, and ice melt under the influence of heat. Did the water not contain these potentialities the result would certainly not follow. But the change is one of condition under additional influence, not necessarily of independent constitution. Did cardiac muscular tissue not possess the potentiality of manifesting the various states to which the names mentioned have been given, the phenomena they connote would certainly not appear. But it does not follow because this is so that the blood and the nerves do not in life, and with organs intact, induce conditions which have as a natural consequence the various states of muscle mentioned. Even on this showing, however, the blood and the nerves are only general terms for materials which conduct force, as air does heat and cold, and suggest much more complex conditions the full knowledge of which would give us the key to the mystery of life itself, which some are sanguine enough to suppose it may one day be the lot, desirable or otherwise, of some physiologist or physicist to discover.

Certain *pathological* facts, in addition to the interpretation of clinical phenomena, and the results of experimental physiology already mentioned, are regarded as supporting the myogenic position. Thus Stengel found in a fatal case of bradycardia that a calcification of the aortic cusp of the mitral valve pressed upon the point at which the bundle of His enters the left ventricle for distribution. In estimating the value of this fact we should naturally desire some evidence as to the duration of the bradycardia and the length of time for which the calcification described impinged on the conductive tract. The muscular fibres of this tract are stated by Aschoff and Tawara not to participate in the general hypertrophy of an enlarged heart, and Professor Keith corroborates them on this point so far as his present researches have gone. In one case of bradycardia Aschoff found a "severe sclerosis of the small arteries which traverse the knot and principal bundle of the conducting tract," and in another of the same disorder he found "a very marked development of adipose tissue in the same part." He adds, however, that the heart was generally infiltrated with fat and that he could not establish "any actual destruction of the muscle within the main portion of the conducting system." Dr. G. A. Gibson also found in a case of "heart-block" cellular infiltration and fibrosis of the band in question, while an examination of the vagi gave a negative result. Dr. John Hay has quite recently recorded a case of syncopal bradycardia in which Professor Keith found the fibres of the bundle of His "partially" obliterated. There were, however, periods in which the conducting power of the tract appeared to be good, and Dr. Hay assigns as possible causes of the variation either vagus influence or undue frequency of auricular systole. Needless to add, there was no exhaustive examination of the intrinsic nervous system of the heart.[2]

I merely state the facts related without further comment than that many more such observations will have to be recorded and weighed before a positive conclusion is attained on pathological grounds as to the dissociation of auricular and ventricular action being due to a purely muscular affection of these fibres. Even on physiological grounds one would scarcely expect any gross lesion of the vagi in cardiac *retardation*. We should rather seek it in some evidence of disease in the accelerant nerves which permitted the vagus influence to be exercised unrestrained. But we know that the pathology of the cardiac nervous system is, at present, practically a *terra incognita* and the physiology of the newly discovered conductive tract is still in its infancy. Details in its innervation even are unknown as I have already stated. The importance of the nervous system as influencing cardiac action is, on the other hand, also argued by certain facts which are difficult to explain on the hypothesis of its playing a merely regulating rôle in a muscularly independent organ. The influence of psychical and physical stimuli in producing alterations in the rate, rhythm, and force of cardiac action is among the common-place observations of physiology, experimental and clinical and subjective. Do they do so merely by playing the part of the horseman to the horse, to use Wenckebach's simile, that is, by curbing constant independent propertier of the muscles, or by urging them to increased effort? Os does the nervous system augment or inhibit manifestations

[2] Professor Keith and Dr. Charles Miller give anatomical particulars of a case of long-standing bradycardia in THE LANCET of Nov. 24th, 1906, p. 1429, in which the muscular connexion between the auricles and ventricles must for long have been destroyed, but in which, nevertheless, the His-Purkinje system beyond the point of destruction showed no degeneration. They conclude from this that *conductivity* is not the *only* function of this system. Their paper was published after this lecture had been delivered and we thus see an enlargement in conceptions of the functions of this tract already manifesting itself, although we are no nearer a solution of the essential cause of these functions.

of muscular action by modifying the production of stimuli or changing their nature? That is, of course, the whole ground of controversy between the myogenist and the neurogenist. There are some recorded clinical experiences which appear to argue that the independence of the properties ascribed to visceral muscle may be matter of legitimate doubt.

Jonesco, a surgeon of Bucharest, affirmed in 1897 that he had removed the entire chain of three sympathetic cervical ganglia with the intervening cord on both sides without ill result in a case of exophthalmic goitre, and, moreover, that he had never seen any evil consequences from this procedure. Some Parisian surgeons also report that they have cut the cord and removed the ganglia without a fatal result as a rule, although in one case, under the care of M. Faure, the patient suddenly died while under an anæsthetic after the cord and superior and inferior ganglia had been removed upon the right side. He suggests that the anæsthetic (chloroform) had a share in the catastrophe. The experience of able surgeons in this country, however, indicates that fatal consequences may be directly attributable to that severance of the connexion between the heart and its nervous endowment which continental surgeons affirm they have effected without such a result. I have the permission of my friend, Mr. C. B. Lockwood, conscious of his strength, for recording his unfortunate experience of such a case, with notes of which he has supplied me.

The patient, a young woman, aged 19 years, suffering from exophthalmic goitre, with thyroid, heart and eye signs of two years' duration, was admitted into St. Bartholomew's Hospital on Jan. 18th, 1899, under the care of Dr. W. P. Herringham. A month later (on Feb. 18th), the patient having been anæsthetised with gas and ether, Mr. Lockwood operated upon the cervical sympathetic about 2 o'clock in the afternoon. The ganglia were not removed but the cervical cords were divided, that on the left completely, and a small portion excised; that on the right consisted of two cords, one of which was divided. The patient was removed to bed and quite recovered from the anæsthetic. The classical signs of division of the sympathetic were well marked on the left side, the pupil of the left eye being contracted and the left half of the face flushed and occasionally sweating freely. The pulse and respiration were accelerated and the temperature slightly raised from the commencement. The pulse became irregular and occasionally intermitted. As the day advanced these signs were more marked. The pupils also varied in size and at 11.20 P.M. they were equal and "pin-point." At 1 15 A.M. on the 19th the temperature was 105·2° F., the respirations were 60, and the pulse was 200. At 2.42 A.M. there were general convulsions. Both pupils were dilated and the left more than the right. At 2.45 A.M. the patient died, the temperature being 105-6° and the left pupil being dilated and the right contracted.

A well-known provincial surgeon has also informed me that he divided the sympathetic cord on one side only and with fatal consequences in a case of exophthalmic goitre. It is difficult to reconcile these results with the experience of continental surgeons. Mr. Lockwood had some difficulty when operating on the chain in the right side of the neck in his case in determining in a leash of nerve cords which was the sympathetic, but the necropsy proved that he had completely divided the left and partially the right. Mr. F. F. Burghard of King's College Hospital informs me that he has on more than one occasion removed both the superior ganglia of the cervical sympathetic without fatal consequences, which is valuable clinical confirmation of the physiological conclusion from experiment that the chief cardiac outflow of visceral sympathetic nerves is through the inferior cervical ganglia without its previously traversing the superior ganglia.

Without wishing to be unduly sceptical one feels disposed to question whether there has not been some error as to complete division of the sympathetic in the cases reported to have suffered little inconvenience from the procedure. That an important nerve such as the pneumogastric may occasionally be divided on *one* side without fatal results is admitted, and the same is probably true of the sympathetic, but a complete division of the nerve on both sides, both as regards the pneumogastric and the sympathetic when the inferior cervical ganglion is involved, must on physiological grounds be scarcely compatible with life. Whatever view, therefore, may be taken of the essential nature of muscular and nervous action, it is manifest that their relation is so intimate in man as to render impossible *persistent* organic action when their union is severed, and we return to the position at which we commenced—namely, the tripartite unity of the hæmic, muscular, and nervous factors in cardiac action, which I imagine we all acknowledge to be essential to sustained organic activity.

So far, we have been concerned with a consideration of the essential or intrinsic causes of cardiac motion and therefore also with the causes of disorder in such function. Some reference may now be made to more accidental or extrinsic causes, for these also have an important bearing on treatment and, like all extrinsic or accidental circumstances, are at times more easy of correction than the essential causes of disordered cardiac action. Such extrinsic causes are mechanical and in their management frequently require the coöperation of the physician with the surgeon. They concern the blood-weight or distribution as distinct from the blood-supply to the cardiac muscle, the valvular mechanism to secure a due distribution of the blood, and space enough without impediment for the organ to contract and dilate and to receive and project its contents—in short, the causes which affect the working of the heart as distinct from those which underlie its action. The mechanical factors frequently dominate the situation, when, as so frequently happens, in addition to cardiac and intracardiac causes of difficult circulation, the movements of the organ are rendered more difficult by extracardiac adhesions to neighbouring parts, or by notable impediments to full respiration due to effusions of fluid or the presence of abnormal solids in the thoracic or abdominal cavities. The modification or, when possible, the removal of such aggravating mechanical factors then becomes a paramount necessity. It is manifest therefore that when the physician fails to restore an easy balance between the intrinsic factors in a labouring circulation by the indirect influence of the potent agents so frequently successful in his hands he must seek in some cases the coöperation of the surgeon in the modification or removal of such extrinsic factors as are amenable to his art.

## ON THE TREATMENT OF FRACTURES IN THE VICINITY OF JOINTS.

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I DO not propose to say anything about the diagnosis of fractures, since it has resolved itself so largely into a question of obtaining perfect x ray photographs. I will satisfy myself by urging the importance of obtaining photographs in several planes, since it is only in this way that the nature of the fracture can be accurately diagnosed. The x ray photograph also furnishes us with a ready means of determining the manner in which we have done our work, whether we have attempted to replace the fragments in accurate apposition by manipulation or by operation. In either case the part should immediately after the operation be photographed in several planes, so that any defect may be effectually dealt with as soon as possible.

The fractures about the ankle-joint come under two distinct groups. First we have those produced by excessive abduction, which are called Pott's fractures and which consist in a spiral or torsion fracture of the lower portion of the fibula with or without rupture of the internal lateral ligament, or of transverse fracture of a portion of the internal malleolus with or without a vertical fracture of the posterior and outer part of the lower end of the tibia which is attached by ligament to the fibula. Secondly we have those produced by a fall on the foot in a position of considerable adduction or of activity. In these the inner malleolus with a portion of the tibia are broken off by a vertical fracture which usually traverses the tibia at the junction of the malleolus with the lower surface of the tibia. The malleolus with the portion of the shaft is displaced upwards upon the rest of the tibia. The fibula is broken transversely immediately above the attachment to the lower end of the tibia. The fracture is of the nature of a scrunch and the fragments may be much comminuted. Fig. 1 represents such a fracture taken from before backwards. This man to avoid being crushed jumped down into a ship's hold. The inner malleolus with a portion of the tibia was displaced upwards,

while the fibular fracture was much comminuted. The tibial fragment was replaced in position and was retained by means of a steel plate fixed by two screws, a long one traversing the lower end of the tibia and a short one the inner malleolus. It did not appear necessary to do anything to

FIG. 1.

Represents an "adduction fracture" of the ankle taken from before backwards. It shows the character of the fracture of the fibula in this form of injury in a typical manner. It also illustrates very well the fact that a radiogram taken in this plane does not show the very considerable backward and upward displacement of the tibial fragment which almost always exists and which was most marked in this particular case. The omission to take radiograms of fractures of the ankle in two planes crossing each other at right angles has, in my experience, frequently led to disastrous results. The skiagram is taken at an angle which does not show the really great displacement which existed.

the fracture of the fibula. Fig. 2 shows the condition of the part after recovery.

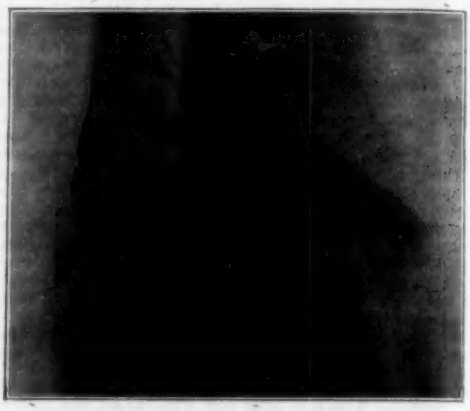
Now in either of the above conditions if by any process of manipulation and fixation in splints I am able to retain the fragments in apposition I am satisfied to deal with them in

FIG. 2.

Shows the condition of the parts after the patient had resumed his usual habits of life. The steel plate is seen lying on the inner aspect of the malleolus and shaft of the tibia, to both of which it is securely fixed by screws of suitable lengths.

that manner. In a very alcoholic patient or in a fat woman I prefer to deal with them in this way even if I cannot effect anything approaching perfect apposition, for the reason that the lower end of the tibia and fibula in such people is very friable, the compact tissue being very thin. This produces a comminution or scrunching of the fragments, rendering accurate apposition by operation difficult or impossible because of the loss of substance. The retention of the fragments in position often cannot be effected, for whether screws, wires, plates, or staples are used their hold upon the bone is insufficient to be of any service.

FIG. 3.



Represents an "adduction fracture" of the ankle in which the tibial fragment was secured by means of a single long screw. As in Fig. 2 the external malleolus is restored to its normal relationship to the astragalus, its fracture requiring no further operative treatment for its fixation.

In the ordinary subject, when I am able to satisfy myself that apposition cannot be effected by manipulation, I do not hesitate to advise operative interference. How cases in each of these two groups must be treated by operation depends largely on the details of the injury. Roughly speaking, in an abduction or Pott's fracture, since in these circumstances the fracture in the fibula is almost always clean and the texture of the bone firm, I prefer to expose it and to unite the fragments in perfect apposition by silver wire perforating the fragments, by metal plates with screws, with screws alone, and very occasionally with staples. Very frequently find a

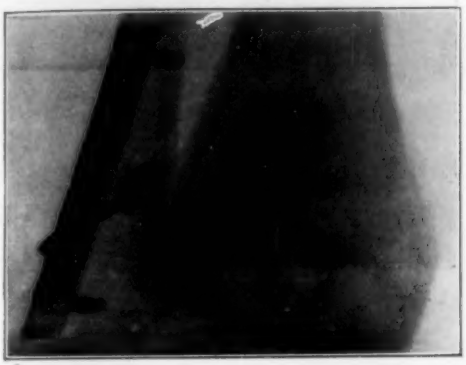
FIG. 4.

Represents an "abduction fracture," or Pott's fracture, of the ankle in which the displaced fibular fragment had after replacement in position been secured immoveably by a plate and screws.

combination of these methods very useful; for instance, the fragments may be perforated and a wire introduced which will include in its grip a plate through which screws are driven into the malleolus and into the fibula above the fracture. In this way not only are the surfaces retained in apposition

by means of the encircling wire but a very stout steel splint is supplied which takes almost all the strain off the junction and absolutely prevents any buckling of the fragments on one another. On effecting accurate apposition of the fibular fragments it is usually found that in the fracture of the back of the tibia and in that of the internal malleolus, should either or both exist, these fragments come into their normal position, but should the internal malleolus appear to be at all mobile I cut down on it and fasten it with wire, plate and screws, staple, or by a long screw perforating the inner malleolus and shaft obliquely in an outward and upward direction. Fig. 3 shows the manner in which the inner malleolus may sometimes be fixed with the greatest advantage by means of a single screw, the fibular fragments coming into accurate apposition. Fig. 4 represents a Pott's fracture in which the inner malleolus was not broken. The fibular fragments were secured in perfect apposition by means of a steel plate and screws. Fig. 5 is the result of an operation for a very bad Pott's fracture, accompanied by very considerable displacement of the foot and by a fracture of the internal malleolus and back of the tibia. The tibial fractures are not well shown in this illustration, the

FIG. 5.



Represents the result of a bad case of abduction fracture in which the inner malleolus and the fibula were broken with a large piece of the back and outer part of the lower end of the tibia. The dislocation and replacement of fragments were effected with great difficulty. A long steel plate with screws at either end, assisted by a stout silver wire, which encircled the seat of fracture and the plate, afforded a means of effecting securely the apposition of all the fragments.

fragments having been replaced in accurate apposition. The fibular junction has been secured by a steel plate, two screws, and an encircling wire.

The knee-joint, except for fracture of the patella, which calls for no special remarks, rarely sustains fracture of the ends of the femur or tibia. In separation of the epiphysis of the femur I have found it necessary to expose the seat of fracture in order to replace the fragments in position. As a rule there is little tendency to displacement, but if there is a couple of staples afford the most effective means of securing the surfaces in apposition. In vertical fractures into the joint I have found screws or wire efficient.

In fractures about the hip-joint, as in the shaft of the femur, long steel plates with several screws perforating both layers of compact tissue and placed at suitable angles have served best to retain the fragments in accurate apposition. Fig. 6 represents a transverse fracture of the femur through the upper part of the lesser trochanter. There was some comminution of the upper fragment, a triangular fragment of bone being driven into the medulla. Every effort to replace the fragments by manipulation failed because of the displacement outwards and upwards of the upper fragment. The fragments were exposed, the depressed piece of bone was levered into position, the broken surfaces were brought into accurate apposition and were retained securely in position by stout steel plates and screws. That the junction effected was secure was shown by the fact that though the man during the momentary absence of the nurse flung himself out of bed and subsequently developed delirium tremens, and though his splint had to be removed, nevertheless the fragments remained in accurate apposition, as is shown by Fig. 7, which was taken when the man left the hospital.

In extension and abduction fractures of the wrist, commonly called Colles's fractures, if the fragments cannot be replaced by manipulation I make a vertical incision over the posterior and outer aspect of the seat of fracture and

FIG. 6. FIG. 7.

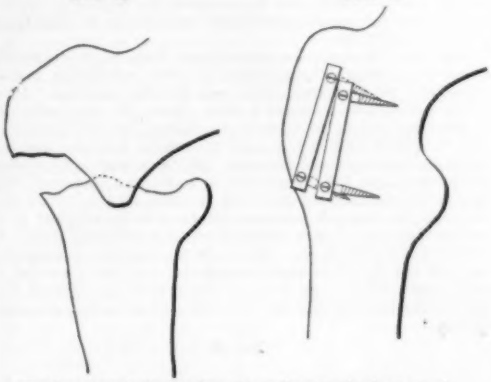
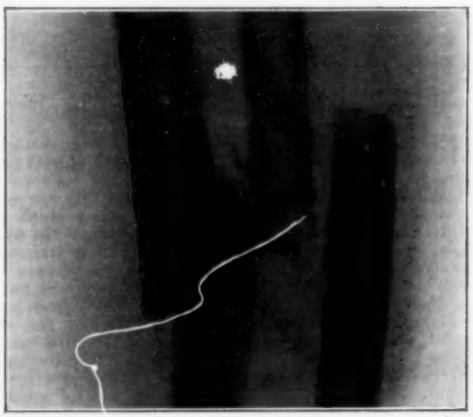


Fig. 6 represents the tracing of a radiogram of a fracture of the femur about the level of the lesser trochanter; and Fig. 7 shows a tracing after operation. These outlines were substituted for the original radiograms as these were not sufficiently clear for reproduction. The plates and screws which retained the fragments in position are also depicted.

introducing a steel elevator beneath the lower fragment, which may be formed by the epiphysis, lever it into position. This can only be done when the lower fragment is not comminuted. The hand is then fixed in a position of complete flexion and abduction. It is but rarely necessary to introduce any metal, since once placed accurately in position the fragment does not tend to become displaced.

Fractures of the olecranon are, I believe, most effectually dealt with by means of a long screw. Occasionally the screw may require removal after a long interval, because of the

FIG. 8.



Represents an ununited fracture of the radius and ulna.

gradual exposure of its head. I have removed one 11 years after the operation for this reason. Fractures of the coronoid process are sometimes very difficult to deal with. On the whole, I believe that excision of the fragment is generally the best treatment. Much depends, however, on the nature of the fracture and the displacement of the fragment.

Fractures of the head of the radius are sometimes the cause of some anxiety as to the best measures that should be adopted. Sometimes I have replaced the fragment,

fastening it in position. The difficulty I experienced was that owing to the small size of the fragment and its friability I was unable to fix it sufficiently firmly to permit of rotatory movements being commenced at once and while waiting for union adhesions were liable to form and limit movement. Again, in some cases I have removed the fragment and in others removed the stump of the head as well. In both very satisfactory results have ensued. If by manipulation the fragment can be restored to, or nearly to, its normal position passive movements undertaken at once form the best treatment.

The fracture about the elbow-joint that more frequently calls for operative treatment is that commonly called separation of the lower epiphysis of the humerus. In a small proportion of cases I have found it impossible to replace the epiphysis in perfect position by manipulation, but I have done it by making a vertical incision over the posterior aspect of the fracture, and by introducing a steel point between the fragments I have supplemented the leverage action exerted upon the fracture by the radius and ulna and so managed to restore the bone to its original form and usefulness. I have ceased to use any retaining media in these circumstances, since there is no tendency to displacement if the elbow is kept fully flexed. If the fragment is displaced laterally as well as backwards the lateral displacement must be reduced before that in an antero-posterior plane.

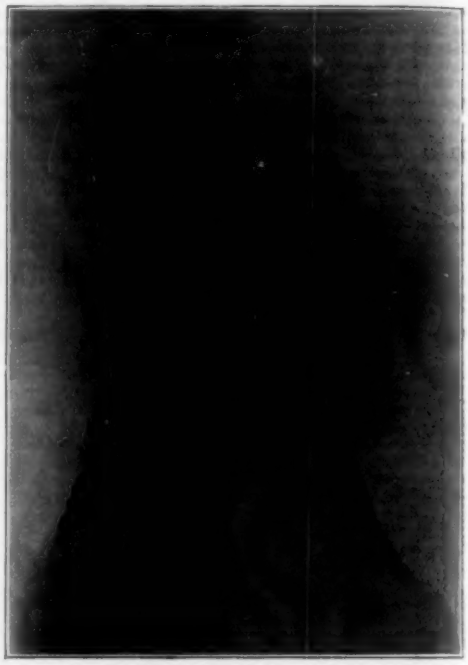
FIG. 9.

Shows the results of operation on Fig. 8, the replaced fragments having been secured by screws and plates.

The last joint to which I will call attention is the shoulder. In fractures of the upper end of the humerus in which I have been unable by manipulation to restore the bone to its original form and in which it was important that the functions of the joint should be perfect I have exposed the fracture and replaced the fragments in position. In many cases, as in separation of the epiphysis and in transverse fracture of the surgical neck, once accurate apposition has been obtained there is no tendency to displacement, but if the fracture is oblique or if the bones are comminuted some retaining medium must be employed. Staples are very useful when it is necessary to perforate the trochanters because of their cancellous structure, but if the fragments offer a dense hold screws or screws and plates are very useful. The results of such operations are as good as possible.

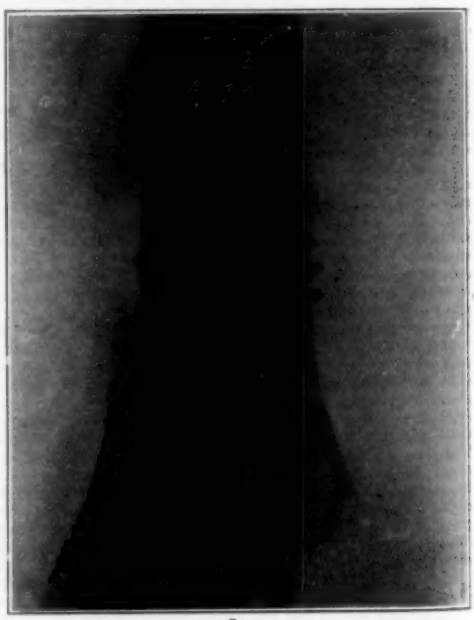
Now a few words as to the best media for retaining fragments in accurate apposition. I find screws in two gauges most useful; up to three-quarters of an inch Gauge 5 is as good as any. As three-quarters of an inch is a very useful size I use it in Gauge 7 also, which is the gauge of all the screws over that length. Having only two gauges three diamond drills only are required, one for the thread of the screw of Gauge 5, one for the barrel of Gauge 5 and for the thread of Gauge 7, and one for the barrel of Gauge 7. Stout metal plates can be usefully combined with the screws. They are made in various lengths with two, three, or more holes. Some of the plates are of steel, while others which are of

FIG. 10



Illustrates a comminuted fracture of the lower end of the femur in which the fragments were much displaced.

FIG. 11.



Shows the result of operation on the fracture illustrated in Fig. 10.

hard German silver can be best employed to fit the curves of bones. Those used for fractures of small bones like the radius, ulna, clavicle, and fibula are drilled to the 5 Gauge which allows the passage of a screw that will perforate both compact layers, a matter of vital importance since a screw obviously cannot get a secure hold on a single compact layer. To illustrate this I have chosen Fig. 8 which represents an ununited fracture of nearly three months' standing rather than a recent fracture, since the difficulties to be encountered are much greater in the former than in the latter. The injury was sustained on Feb. 22nd, 1906, and came under the care of a surgeon who has devoted much attention to the mode of production of fractures. I mention this fact to show that the patient had the advantage of the best treatment possible at the time of the injury. Manipulation was effected under an anæsthetic and plaster-of-Paris was employed for fixation. A useful arm was promised in about six weeks. On May 17th, we exposed the fragments, removed their ends, and effected accurate apposition by screws and plates. The patient has now a perfectly useful arm. Fig. 9 represents the fragments united by means of the plates and screws.

Fig. 10 represents a more or less vertical fracture of the lower end of the femur into the knee-joint in which the condyles were separated by a considerable interval. Fig. 11 shows the condition after operation.

Virgin silver appears to afford one of the best wire media should such be required. Staples with prominent or rounded angles are often very efficient in conditions suitable to their use, as in the case of the upper end of the humerus and the lower end of the femur. I know no condition in which pegs can be of any use mechanically.

Cavendish-square, W.

## THE OPSONIC INDEX TO VARIOUS ORGANISMS IN THE SANE AND INSANE,

### WITH THE RESULTS PRODUCED BY INJECTING TUBERCULIN.[1]

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THE recent observations of Wright and others on the opsonic power of human blood serum to the tubercle bacillus and other organisms and the methods they have discovered of estimating this power have opened up a new field for research and provided new methods of treatment for bacterial diseases which have already produced beneficial results. As Wright[2] found that in cases of staphylococcal and tuberculous infection with an entire absence of clinical symptoms there was a diminished phagocytic power to these organisms as compared with that of healthy individuals, and as this power could be increased by injections of the corresponding vaccine, he concluded that the lowered phagocytic power permitted infection to occur and that the resistance to infection by any organism could be estimated by calculating the opsonic power of the blood serum. The results of observations recorded by Bulloch and others agree with those obtained by Wright and support his view, as all have found a lowered opsonic power in cases of localised tubercular and staphylococcal infection, and these are the cases which benefit most from vaccine injections. Low tuberculo-opsonic indices have also been found in cases of early phthisis "cured" by sanatorium treatment. These cases frequently relapse, however, and whether the low opsonic index is the cause or the result of infection is not definitely decided. The estimation of the opsonic index of a class of healthy patients with a decided liability to tuberculous infection is therefore an important point in estimating the value of a low index as an indication of the resistive power of the individual to infection.

The statistics of the death-rate from tubercular disease, particularly phthisis, occurring in asylums leave no room for doubt that the insane as a class are specially liable to tuberculous infection. In their last report the English Commissioners in Lunacy compare the death-rates in institutions for the insane with those of the general population, all deaths under the age of 15 years being excluded. The death-rate of the general population per 1000 from phthisis was for males 2·07 and for females 1·35, while in the insane population it was 16·0 and 14·6 for each sex respectively. The Scottish Commissioners in their report for 1905 refer to the same subject and quote figures which are equally striking. In the six district asylums showing the lowest death-rate from tuberculous disease, of which Perth district asylum is one, the average per 1000 patients resident was 11, while in the counties from which these asylums draw their patients the average per 1000 persons living between the ages of 20 and 60 years was 2·8. Clouston says that in asylums consumption is between three and four times more common than in the general population at the same ages, and the figures quoted above more than support his statement. Even although a certain amount of the difference in the death-rates might be accounted for by overcrowding or other unfavourable conditions in some asylums or by the greater number of post-mortem examinations, and more complete and accurate returns made by institutions, or by the great difference in the totals from which the averages are estimated, still the fact remains that the insane are more susceptible to tuberculosis than ordinary individuals.

I have made observations on the opsonic indices of six members of the staff of Perth District Asylum and also on 30 patients suffering from various forms of mental disease. All were at the time of observation free from active tuberculous disease but five of the patients examined showed evidences of having at one time suffered from such infection. Of these cases one had cicatrices in the neck, while the others showed signs of former lung mischief. Two of them were suffering from general paralysis, one of whom has since died, and only a few small cicatrices at the apex of one lung were found post mortem. The usual technique for the estimation of the opsonic index was employed, equal quantities of serum, leucocytes, and bacterial suspension being used. The blood for examination was taken at the same hour each day and five consecutive observations were made in each case. Koch's new tuberculin T.R. was then injected and daily observations were made for a further period. My own leucocytes were used throughout and my blood serum was used as control. Its opsonic power was fairly constant, the number of bacteria ingested showing little variation from day to day. For the estimation of the tuberculo-opsonic index the contents of 80 leucocytes were usually counted and in no case were less than 50 enumerated. Simultaneous observations were made on the opsonic power of various cases to the bacillus coli communis, staphylococcus aureus, and micrococcus rheumaticus. These observations were continued after the injection of tuberculin T.R. The contents of 50 leucocytes were usually counted for these observations, but on a few occasions only 30 were examined. The same number was examined in each case on the same day.

The average tuberculo-index of the six healthy control cases for five consecutive days was 1·07, the average for each case being 0·98, 0·97, 1·32, 1·06, 1·01, and 1·11, showing a variation between 0·97 and 1·32. This average index agrees with the results obtained by other observers in healthy persons. Urwick,[3] in 20 cases, found the average index to be 1 006, while Bulloch[4] in 84 cases found an index of 0·96, and in Lawson and Stewart's[5] 25 cases the average was 1. The total variation, 0·35, is less than that found by Bulloch in the 84 cases he examined. Urwick states that there is little variation in the index of a healthy person from day to day. I found considerable daily variation in some cases, though the observations were made as far as possible under the same conditions. The greatest amount of variation recorded between any two consecutive observations was 0·3. In one control case, however, a record so low as 0·68 was obtained on one occasion.

The average tuberculo-opsonic index of the 30 insane persons examined for five days was 0·88. The variation was between 0·65 and 1·23 and the daily fluctuation was greater than in the healthy control cases. Of these 30 cases the six with the highest indices gave an average of 1·07, which is exactly that found in the same number of control cases. Although a greater number of insane were examined it may be fairly concluded that the average tuberculo-opsonic index of the non-tubercular insane is below that of the healthy sane. The average of the five patients with evidences of old tubercular disease was the same as that found for all the 30 cases.

[1] Extract from a thesis for the degree of M.D. Edinburgh University.
[2] THE LANCET, Dec. 2nd, 1905, p. 1298.
[3] Brit. Med. Jour., July 22nd, 1905.
[4] London Hospital Gazette, vol. xi., March, 1905.
[5] THE LANCET, Dec. 9th, 1905, p. 1679.

The difference between the index found in the control cases, 1·07, and that found in the insane patients, 0·88, is very marked. This observation is therefore strong evidence in favour of the view that the opsonic power of the blood serum can be used as a test of the liability to tuberculous infection.

An examination of the indices obtained in the various classes of patients gives corroborative evidence. The index obtained in four cases of general paralysis was 0·79. As a class general paralytics are peculiarly liable to tuberculous infection. Mickle states that of all such cases examined post mortem 26 per cent. exhibited caseation or cavities, 12 per cent. arrested phthisis, and 65 per cent. pleuritic adhesions. Two of the four cases observed showed evidence of old lung trouble, but the index of the two cases with no signs or symptoms of previous infection was only 0·78, so that their liability to tuberculous disease may be due to their low resistive power as indicated by the opsonic index. Seven of the patients examined were suffering from acute mental disease. Three of these were cases of adolescent insanity, a class of patient particularly liable to tuberculosis. Their average index was 0·84. Of the remaining four cases two suffered from melancholia and two from mania. The index of the former was 0·88, of the latter 0·91, and as patients suffering from maniacal excitement are less prone to contract tuberculous infection than those suffering from melancholia this observation also supports Wright's view.

The chronically insane are generally believed to be more liable to tuberculous infection than the more acute cases. In 11 chronic cases of secondary dementia the average index was 0·93, while that of seven acute cases was only 0·87. This would seem to indicate that the acutely insane have a lower resistive power than the chronic demented cases, but it is also possible that the latter may become infected during the period of acute onset of the mental disease.

To estimate still further if there was any difference between the sane and insane in their reaction to tubercle I injected the six control cases, all members of the asylum staff, and the 30 patients with Koch's new tuberculin T.R.

In estimating the effect of the injection of any drug or vaccine it is necessary to take into consideration the idiosyncrasy of the individual to the particular drug or vaccine used. With a vaccine injection the idiosyncrasy of the person injected may be taken to represent the liability to infection by the particular organism from which the vaccine is made. In persons suffering from bacterial infection the injection of a vaccine of the infecting organism is followed by a negative phase or fall in the opsonic power of the blood serum and if the dose used be large enough a temperature reaction and constitutional symptoms may be produced. The negative phase is followed by a rise in opsonic power, or positive phase, which lasts a variable time but ultimately the opsonic power falls back to the level at which it stood prior to injection.

Wright[6] has stated that the result of his observations seem to suggest that the development of a negative phase following a dose of T.R. smaller than that which would produce this result in a healthy person may prove to be an index of tubercular infection. He found that the negative phase supervenes upon a very much smaller dose and persists much longer in the case when the patient is the subject of extensive infection than in the contrary case. Lawson and Stewart[7] injected four healthy persons with tuberculin T.R., the dose not being stated, and produced no negative phase. They therefore concluded "that the appearance of a negative phase after inoculation with a small quantity of tuberculin T.R. should enable one to distinguish between the blood of a subject of tubercular invasion and that of a person in sound health." The production of a negative phase after injection is therefore very important from a diagnostic point of view. So far no exact definition of the term negative phase has been made. As I found considerable variation in the opsonic index from day to day and, especially in the insane, that a slight rise sometimes occurred at the first observation made 18 hours after injection, I take a negative phase to mean any fall in the opsonic index occurring within 48 hours after injection, the index being below the level noted at the time of injection and also below the average level for the five preceding days.

Four control cases were injected with $\frac{1}{100}$th of a milligramme of tuberculin T.R. In two a distinct negative phase resulted. The fall in both was immediate and lasted in the one case two days and in the other three days, reaching 0·59 and 0·63 respectively. The subsequent rise was rapid, reaching 1·57 in the first and 1·74 in the second case on the sixth day after injection, a point in both cases much higher than any previously reached. In the one case where there was a tuberculous family history the average index prior to inoculation was 0·98 and the amount of variation considerable. The injection was given at a point well above the average level. In the other the average index was 1·32, but was 1·28 on the day of injection. In the remaining two cases no negative phase was developed. Both were injected at a point below the average level and the succeeding indices were low. As the results obtained did not agree with those recorded by Lawson and Stewart I concluded that the dose used was too large. The remaining two cases were therefore injected with $\frac{1}{1000}$th of a milligramme of tuberclin T.R. and with this dose no negative phase was produced. An immediate rise in opsonic power followed the injection, the maximum being reached at the first subsequent observation. The average index of these two cases was 1·01 and 1·11, and they rose to 1·25 and 1·38 respectively. Both were injected at a point slightly above their average level.

Twelve patients were injected with $\frac{1}{100}$th of a milligramme of tuberculin T.R. and in eleven of these a negative phase occurred. In four cases there was a slight initial rise after injection, followed however by a decided fall, which was complete in all four cases on the third day. In six of the cases a lower level was recorded than that reached in either of the two control cases in which a negative phase occurred. In only two of the insane patients did the maximum of the positive phase reach the level attained by the lower of the two control cases. As a rule, the positive reaction was slower and less pronounced in the insane than in the members of the staff, and also in the acute than in the more chronic cases of mental disease. There was no marked peculiarity in the reaction of two of the cases who showed evidence of old tuberculosis.

The marked difference in the percentage of negative phases following injection in the control cases and insane patients, the lower level reached during the negative phase, and the delayed and less pronounced positive phase in the latter class seem to indicate that the resistive power of the insane to tuberculous infection is less than that possessed by sane healthy individuals.

Eighteen patients received an injection of $\frac{1}{1000}$th of a milligramme of tuberculin T.R. and only four showed a negative phase—that is, 22·2 per cent., compared with 91 per cent. of those injected with $\frac{1}{100}$th of a milligramme of tuberculin T.R. As the average index before injection in those to whom the larger dose was administered was 0·87, while in those who received the smaller dose it was 0·89, the greater percentage of negative phases in the former class must be due to the larger quantity injected. All the patients injected with $\frac{1}{1000}$th of a milligramme of tuberculin T.R. were suffering from subacute or chronic mental disease, but the greater percentage of negative phases produced with the larger dose in both the control and insane cases indicates that $\frac{1}{100}$th of a milligramme of tuberculin T.R. is too large a dose to use for diagnostic purposes, and the high percentage following injection with $\frac{1}{1000}$th of a milligramme of tuberculin T.R. would seem to show that a still smaller dose ought to be employed. Only one of the four cases in whom a negative phase occurred—a general paralytic—showed evidences of old infection. The average index of the four prior to injection was 0·99, but the daily variation in these cases was greater than in the 14 in whom no such reaction was produced.

The chief difference noted between the two control cases and the 14 insane patients in whom no negative phase followed inoculation with $\frac{1}{1000}$th of a milligramme of tuberculin T.R. was the slower reaction of the latter after injection. Both control cases reached their maximum on the day following injection, while the insane took an average of four days to reach their positive maximum, but there was little difference in the level ultimately reached, though the average index before injection was lower in the insane.

Wright[8] has shown that a fresh injection of tuberculin during the negative phase produced by a previous injection

[6] Proceedings of the Royal Society, 1904, vol. lxxiv.
[7] THE LANCET, Dec. 9th, 1905, p. 1679.
[8] THE LANCET, Dec. 2nd, 1905, p. 1588.

emphasises the negative phase. I have been unable to trace any connexion between the level of the tuberculo-opsonic index on the day of injection and the subsequent presence or absence of a negative phase. It would appear that in non-tuberculous persons the amount injected has a more important bearing on the result produced than the level of the opsonic index on the day of injection. In all cases where a negative phase was recorded there had been greater irregularity in the opsonic power from day to day previous to injection than in those cases where no such result was observed.

*Observations on the opsonic indices to other organisms.*—The opsonic power of the serum of five control cases and a number of insane patients was estimated to the bacillus coli communis, staphylococcus aureus, and micrococcus rheumaticus, as well as to the tubercle bacillus. Johnstone and Goodall[9] found agglutinins to various strains of the bacillus colic communis in the blood of 60 per cent. of insane cases examined by them. This form of infection is common in such patients and in cases of cystitis in the asylum I have found this, or an allied organism, present in the urine. Boils and skin irritations are common amongst the insane and a staphylococcus aureus may be isolated from many such cases. The strain used during these observations was obtained from the bone marrow of a case of acute mania who died in a typhoid condition. Rheumatism in its various forms is possibly the most common ailment in the district from which the patients were drawn and although this disease does not appear to be more common in the asylum than in the surrounding district I used the micrococcus rheumaticus as a third type of common infective agents.

So far as could be ascertained none of the individuals examined were suffering from any form of illness while under examination and all carious teeth and other sources of infection were removed before any observations were made.

In the control cases the tuberculo-opsonic index was 1·08. To bacillus coli the average index for five days was 1·02, to staphylococcus aureus 1·1, and to micrococcus rheumaticus 1·07. There would therefore appear to be little difference in the average index of healthy individuals to these various organisms. The amount of variation between the average indices of each individual to the separate organisms was greatest to staphylococcus aureus and least to bacillus coli.

To bacillus coli the average index of 12 patients was 1·06. This result compares favourably with that found in the control cases but the amount of variation was greater. The tuberculo-opsonic index of the same patients was 0·97. In 15 cases tested to staphylococcus aureus the index was 1·07. In the same cases the average tuberculo-opsonic index was only 0·9. 11 cases were observed to micrococcus rheumaticus; the index obtained to this organism was 0·94, while to tubercle in the same cases it was 0·91. There is therefore little difference between the average index of the control and insane cases to these three organisms.

With the exception of bacillus coli the average opsonic index of the control cases was higher to all the organisms employed than that of the insane. The amount of variation was less in the control cases except to staphylococcus aureus. The tuberculo-opsonic index of the insane is lower than the index found to any of the other organisms in the same series of cases and the amount of variations to tubercle is greater. These observations would indicate that the insane are more liable to organismal infection than the sane, and that they have a lower resistive power to tubercle than to any other of the organisms employed.

All four control cases injected with $\frac{1}{100}$th of a milligramme of tuberculin T.R. showed a subsequent negative phase to staphylococcus aureus. Three gave a similar reaction to bacillus coli and two to micrococcus rheumaticus. Of the two cases who gave no negative phase to tubercle, one had a fall in opsonic power to all three organisms, while the other gave a similar result with bacillus coli and staphylococcus aureus. Two of these cases developed a negative phase to tubercle. One of them reacted in the same way to all the three organisms, while the other only did so to staphylococcus aureus. Of the 12 series of observations made to organisms other than the tubercle bacillus after the injection of tuberculin, in nine a negative phase resulted, that is in 75 per cent. The fifth control case was injected with $\frac{1}{10}$th of a milligramme of tuberculin T.R. No negative phase to tubercle was produced, but there was a fall in opsonic power to micrococcus rheumaticus.

Nine patients injected with $\frac{1}{100}$th of a milligramme of tuberculin T.R. were tested to bacillus coli after injection and in all a negative phase resulted. All 12 cases injected with this dose of tuberculin T.R. were tested to staphylococcus aureus and in eight a negative phase followed, that is in 66·6 per cent. Of eight cases examined to micrococcus rheumaticus, five gave a negative phase, that is 62·5 per cent. A series of 29 observations was made on the insane patients to the three organisms after injecting tuberculin and in 22 cases negative phases were produced, that is in 75·86 per cent. On comparing the results obtained in the control and insane cases to these organisms it is seen that as there was little difference in their average indices before injection so the total percentage of negative phases produced is very similar in the two classes. The percentage of cases where a negative phase was observed was less in the control than in the insane cases to bacillus coli and micrococcus rheumaticus, but greater in the control cases to staphylococcus aureus, and this was the only organism in which the variation in the indices before injection was greater in the control cases than in the insane.

Three patients were injected with $\frac{1}{10}$th of a milligramme of tuberculin T.R. and afterwards tested to the other organisms. One of them gave a negative phase to tubercle only. Two gave no negative phase to tubercle, but one of them showed this reaction to all the other organisms while the other did so to bacillus coli. Of the nine observations made to the organisms now under consideration four showed a negative phase, while in the one control case similarly tested after being injected with the same dose of tuberculin the only negative phase recorded was to micrococcus rheumaticus. There is therefore a larger proportion of negative phases produced in the insane with this dose also.

A comparison of the results obtained in the different classes of cases to all the organisms, before and after injecting tuberculin, shows that there is a difference in the resistive power to organismal invasion between them. The tuberculo-opsonic index of five control cases before injection was 1·08, to bacillus coli it was 1·02, to staphylococcus aureus 1·1, and to micrococcus rheumaticus 1·07, giving an aggregate average of 1·06. Of the cases of acute mental disease examined to two or more organisms the index to tubercle was 0·87, to bacillus coli 0·96, to staphylococcus aureus 1·01, and to micrococcus rheumaticus 0·9, the aggregate average being 0·93. The more chronic cases similarly examined showed an average index to tubercle of 0·93, to bacillus coli 1·06, to staphylococcus aureus 1·12, and to micrococcus rheumaticus 0·96, while the aggregate average was 1·01. The index recorded to each organism for the acute cases is therefore below that of the control cases and also of the more chronic patients. The index of the chronic cases is below that of the control cases to tubercle and micrococcus rheumaticus but slightly above the control index to bacillus coli and staphylococcus aureus, but the control aggregate is higher. As no acute case was injected with $\frac{1}{10}$th of a milligramme of tuberculin T.R. a comparison of the different results after injection can only be made on those who received $\frac{1}{100}$th of a milligramme of tuberculin T.R. With this dose the percentage of negative phases recorded in the control cases to all the organisms was 68·7. In the acute cases it was 80·9 and in the chronic cases 80. The percentage is seen to be highest in the acute cases and lowest in the control cases. This result corresponds with that obtained by comparing the average indices before injection and would seem to show that the resistive power of the insane to organismal infection is less than that possessed by the sane and that the more chronic are less liable to infection than the more acute cases.

Five chronic cases tested to all four organisms were injected with $\frac{1}{100}$th of a milligramme of tuberculin T.R. and a negative phase resulted in 80 per cent. Three similar cases received an injection of $\frac{1}{10}$th of a milligramme of tuberculin T.R., and in 41·6 per cent. of the subsequent observations a negative phase was noted. A very slight reduction of the dose injected has therefore a marked effect on the number of negative phases produced.

The demonstration of the specificity of the opsonic body in the blood serum is necessary to support the view that the production of a negative phase after the injection of a minute dose of tuberculin is diagnostic of infection by the

[9] Brit. Med. Jour., Oct. 3rd, 1903.

tubercle bacillus. Bulloch has shown by experiments that the opsonic body is largely specific. I found that with a dose of $\frac{1}{25}$th of a milligramme of tuberculin T.R. even in absolutely healthy individuals a fall of opsonic power to other organisms than the tubercle bacillus was produced. In one control case injected with $\frac{1}{10}$th of a milligramme of tuberculin T.R., though there was a rise in opsonic power to tubercle, there was a fall to the micrococcus rheumaticus after injection. Both these doses are therefore too large for diagnostic purposes.

The absence of local and constitutional symptoms after the injection of tuberculin was very marked. There was no local irritation and beyond a slight feeling of stiffness in the flank at the site of inoculation no inconvenience was caused, and all continued to perform their usual duties. In two control cases there was a slight increase of pulse-rate. In one it was 92 per minute on the evening after injection, while in the other it was 102 on the second evening. There was no rise of temperature, however.

The temperature chart of the insane frequently shows greater irregularity than that of healthy individuals, but the temperature and pulse-rate of the patients injected with $\frac{1}{25}$th of a milligramme of tuberculin T.R. showed no greater variation after injection than had occurred in the same cases during the preceding week.

In all 20 persons were injected with $\frac{1}{10}$th of a milligramme of tuberculin T.R. and in only three did any alteration in temperature or pulse-rate occur. Two were general paralytics. In one the temperature recorded on the second day was 99° F., while in the other the pulse-rate was 94, but the temperature was not affected, and though this patient showed evidences of old lung disease no negative phase was recorded. Such changes in temperature and pulse-rate frequently occur in general paralytics and were therefore not necessarily due to the administration of tuberculin. In the third case the temperature rose to 99·2° on the evening after injection. Such doses of tuberculin T.R. can therefore be administered to non-tuberculous persons with perfect safety.

No mental effect was produced by $\frac{1}{10}$th of a milligramme of tuberculin T.R. and though all the acute cases were inoculated with the larger dose the mental symptoms resulting were neither definite nor lasting.

*Conclusions.*—Some important general conclusions may be drawn from the results obtained. 1. As the insane are particularly liable to tuberculous infection a comparison of the average indices recorded in the sane and insane and also in the various classes of insane patients would indicate that the opsonic power of the blood serum can be used as a measure of liability to infection and that a low opsonic index precedes infection. 2. The injection of a small dose of tuberculin T.R. in healthy persons produces no negative phase to the tubercle bacillus and therefore may be used as a method of diagnosis. A smaller dose of tuberculin will, however, produce a negative phase in a predisposed person than in one less liable to tuberculous infection. 3. To determine the value of a negative phase after injection the daily variation in opsonic power as well as its level at the time of injection must be estimated. For this reason a number of consecutive observations are necessary; a single, or a number of isolated observations is not sufficient. 4. The average opsonic indices of healthy individuals varies little to different organisms. 5. The injection of a large dose of tuberculin even in healthy individuals causes a fall in opsonic power to other organisms than the tubercle bacillus. This explains the liability of tuberculous cases to secondary infection. For purposes of differential diagnosis by the production of a negative phase a very small dose must be administered. 6. Large doses of tuberculin can be injected into healthy persons without producing constitutional symptoms. Amount of dose may therefore be a matter of diagnostic significance as a small dose causes a reaction in infected cases.

I am greatly indebted to the members of the asylum staff and especially to Dr. L. C. Bruce, the medical superintendent of the Perth District Asylum, for the encouragment and facilities afforded me while engaged in this work.

Montrose.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, VICTORIA PARK.—The festival dinner in aid of the funds of the above hospital will be held on Tuesday, June 4th, at the Trocadéro Restaurant, Piccadilly Circus, W., at 7.30 P.M. The Right Honourable the Lord Mayor of London will preside.

# ON THE CLINICAL ASPECTS OF METASTASES TO THE CENTRAL NERVOUS SYSTEM AND OTHER PARTS IN MALIGNANT DISEASE OF THE VISCERA.

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IN one of his articles on "The Medical Aspects of Carcinoma of the Breast" Professor W. Osler states that "in many cases of internal metastases in cancer of the breast the symptoms are obscure or there are features which make the diagnosis doubtful." In illustration of this general proposition Professor Osler quotes a number of case records which show that the clinical difficulties created by such metastases arise from a variety of causes. In some cases the primary growth in the breast fails, on account of its small size, to attract attention, or it possesses features which conceal its true nature. In others, though the breast tumour has been recognised and removed, so long an interval has elapsed before the clinical evidences of internal metastases display themselves, that their real significance and relationship are overlooked. And in a third group, while one or other of the positions just defined may also exist, the symptoms caused by the metastases are so purely subjective that an interpretation of them as merely functional disturbances is readily adopted. This last-mentioned position seems to be reached in connexion more particularly with the development of secondary malignant tumours in the spinal canal, and situated so as to involve either the spinal cord itself or the posterior roots of the spinal nerves. Pains in the back and side, often indefinite and ill-defined as to position, and sometimes becoming of agonising severity, "may persist for months," says Professor Osler, "without any sign of organic disease"; and even throughout the course of the illness—a period possibly of two years, or even longer—there may be no disturbance of either motion or sensation. In short, the diagnosis of metastases secondary to carcinoma of the breast may be missed, from non-recognition of the original tumour, from delay in the occurrence of the metastases, or from restriction of the clinical evidences to the subjective sensations of the patient.

It is now proposed to describe briefly some clinical experiences which show that what is true, as stated above, of carcinoma of the breast and its secondary developments applies equally to carcinoma of the viscera and the metastases which may result therefrom. In one direction, at least so far as the non-recognition of the primary growth is concerned, this statement has no unfamiliar sound. Thus, it needs but a moderate acquaintance with the facts of clinical medicine to learn of cases of secondary cancer of the liver in which neither the history nor the physical examination gives any hint of the site, or indeed of the existence, of a primary malignant process. It happens that the clinical facts and associations of the secondary growths in such cases are often very conspicuous and free from ambiguity. Further, experiences of this order are relatively frequent events. Hence, here, not only are the results of the metastatic process usually recognised easily but custom removes the surprise which might otherwise be expressed at the absence of all evidences of a primary tumour. It is not unimportant to illustrate the proposition that a very similar order of events may be noted when the primary disease takes origin in organs other than the alimentary canal—such, for example, as the lung, the pleura, or the bladder—and when the secondary growths appear not in the liver but in the central nervous system, the bones, or other parts. Primary malignant disease of the lung or bladder, as is shown in cases recorded in this article, is by no means always in its clinical aspect an urgent and distinctive process, and the symptoms resulting therefrom may fail altogether to suggest the serious conditions on which they, as a matter of fact, depend. Hence secondary or metastatic developments in such cases may readily fail to secure an accurate and ready interpretation, and if, as may be the case, the symptoms arising from such developments are entirely subjective in character, it is hardly surprising to find that they are apt to

receive something less than clinical justice. The moral obviously is that with evidences of visceral disease of more or less obscure significance, and possibly, therefore, indicative of a malignant growth, subsequent disturbances, even though remote in time and situation and wanting in precision, should be regarded with active suspicion. Pain, particularly if severe, obstinate, or recurring, or referred to the back, or to the course of one or more of the spinal nerves, cannot, in such circumstances, be safely dismissed as hysterical or neurotic because of its freedom from association with objective signs of organic disease; the event may pass a painful commentary on such a conclusion. The only safe course is to suspend judgment, with a leaning, perhaps, to the more serious view, until either the appearance of conclusive evidence on the one hand, or the lapse of time without any such demonstration on the other, places the issue beyond dispute. Certain it is that definite proof of metastases subsequent to primary malignant disease of the viscera, at least when the nervous system is the part secondarily involved, may not be obtained until very shortly before the patient's death, and it is conceivable that such proof may even never appear. In the first two of the following cases the primary malignant process, in one case in the lung, in the other in the bladder, gave rise to a mere minimum of local disturbance and to no admitted invasion of the general health and strength, and the patients were comparatively young women. There was thus in each instance little or nothing to excite active suspicion of the true nature of the primary visceral disease. Hence, when nervous symptoms appeared as a result of metastatic extensions their relationship to the earlier symptoms of visceral disease was not easily suggested and there was a temptation to suppose that the sequence was a purely accidental one. Further, the nervous symptoms were comparatively long in existence before objective demonstration of their association with organic change could be obtained. These two cases, therefore, illustrate the propositions which have already been stated. In a third case, whilst there was no doubt about the nature or the site of the original disease, the visual disturbance (hemianopsia) affords an interesting illustration of one among the many possible results of malignant metastases to the central nervous system. A fourth case is added to show how metastases to the bones may bear on the diagnosis of malignant disease of the viscera, the lung in this particular instance being the organ primarily involved.

CASE 1. *Malignant disease of the lung without active symptoms; later, severe pains in the lower limbs; evidence of intracranial disease a few days before death.*—The patient was a woman, aged 37 years, for whose earlier history I am indebted to Mr. Ernest W. Cross. With the exception of an ovarian cyst, which was removed by operation in 1902, the patient was free from serious illness until July, 1905; she then had an attack of pleurisy at the left base. The pyrexia and friction disappeared in the course of a few days, but some intra-pulmonary crepitations were detected, and later there were physical signs of a moderate amount of pleural effusion. In November she was admitted to the Royal National Hospital for Consumption at Ventnor, where she improved generally, and the evidences of pleural effusion diminished. There was no expectoration and thus no search could be made for the bacillus of tubercle. Shortly prior to her admission to the hospital at Ventnor she had complained of pains in the lower extremities, and these became increasingly severe in the latter part of November, often then preventing sleep and demanding the use of morphine. When seen on Dec. 18th the patient appeared to be a well-nourished woman, and her sole complaint was of pain in her lower limbs; the chest condition gave her no trouble. Nevertheless, there were signs of consolidation at the left base and some moist râles were present during inspiration. On physical examination no explanation of the pains could be detected, all the usual clinical tests of the condition of the nervous system giving normal results. On the 21st the patient was admitted to the Royal Waterloo Hospital, and in the course of a day or two it was observed that her speech had a slurred quality and that her mental condition was not clear. Soon she became noisy and semi-delirious and it was then found that double optic neuritis had developed. There were no other evidences of organic nervous disease and the temperature was normal or subfebrile. Afterwards the patient became comatose and died on Jan. 8th, 1906.

The post-mortem examination showed malignant disease (carcinoma) involving the lower third or so of the left lung and some scattered malignant nodules in the liver. Of chief interest, perhaps, was the condition of the brain. Here, in the soft membranes over the convexity of the hemispheres, were several localised hæmorrhages. The largest, having a diameter of about one inch, was situated immediately behind the upper part of the right Rolandic fissure; superficially it had a pale jelly-like appearance and deeply it passed into the sulci and to a slight extent had torn its way into the brain tissue. A smaller hæmorrhage was present about the middle of the left parietal lobe and several others were scattered over the convolutions. With these exceptions the brain appeared to be normal; the spinal cord unfortunately could not be examined. There can, however, be no doubt that either the cord itself or the posterior nerve roots were directly disturbed by a secondary malignant process and that in this way are to be explained the severe pains which formed the prominent feature of the case. Hence it is of great interest to note that at no time, and in spite of repeated examinations, were there discovered any abnormal conditions of the tendon jerks or other objective facts suggestive of organic disease of the cord. The pain was the one and only piece of clinical evidence of the existence of organic change of a malignant order in the lower part of the central nervous system. And it was not until a very few days before death that a demonstration of organic disease in any part of the nervous system could be obtained. Of great interest, too, is the development of optic neuritis in relation to the actual intracranial lesion demonstrated at the necropsy. There were no meningitis and no tumour, at least in the ordinary sense of the term. Yet it may be held that the blood-clot on the surface of the cortex was the physical equivalent of a tumour and that it must bear responsibility as the cause of the neuritis. The only alternative, as an explanation of the neuritis, seems to be embolism of the central artery of each retina. Bilateral retinal embolism is not an easy diagnosis to accept, and, moreover, the ophthalmoscopic picture was the one familiar in optic neuritis and in no respect resembled that of embolism. Thus it seems certain that a blood-clot of moderate size and situated over the cerebral convolutions may cause optic neuritis, and presumably by the same mechanism, whatever that may be, as the one by which intracranial tumour establishes this result. Indeed, a blood-clot in such circumstances may come under the definition (Hughlings Jackson) of tumour as a "foreign body or adventitious product" within the skull. But if this is true of a clot outside the blood-vessels it is conceivable that the same conclusion may apply to an intravascular clot situated in the cerebral veins or sinuses. Both in the one case and the other the bulk of the cranial contents is presumably increased. And as it has been suggested that the optic neuritis which occasionally occurs in chlorosis is to be explained as the result of sinus or venous thrombosis, the present case may be quoted as lending some support to this doctrine. Hence, in addition to the illustration which the case affords of the at times quiescent character of malignant disease of the lung, and of the clinical obscurity which often attends secondary malignant developments in the central nervous system, the record is not without relationship to the problem presented by the occurrence of optic neuritis in circumstances where there is reason to disbelieve in the existence of gross intracranial disease.

In the case next following double optic neuritis is found in association with a tumour situated in the cerebral cortex and it will hardly be questioned that the relationship of these two facts is that of cause and effect. The only difference between the two cases, in this respect, is that in the one first related the "foreign body or adventitious product" in the cortex is a blood-clot and not a neoplasm. To regard this clot as the cause of the optic neuritis, therefore, seems inevitable, and granted this, it is no large step to the proposition that a clot situated elsewhere within the skull (for example, in one or other of the intracranial sinuses) may also conceivably produce optic neuritis.

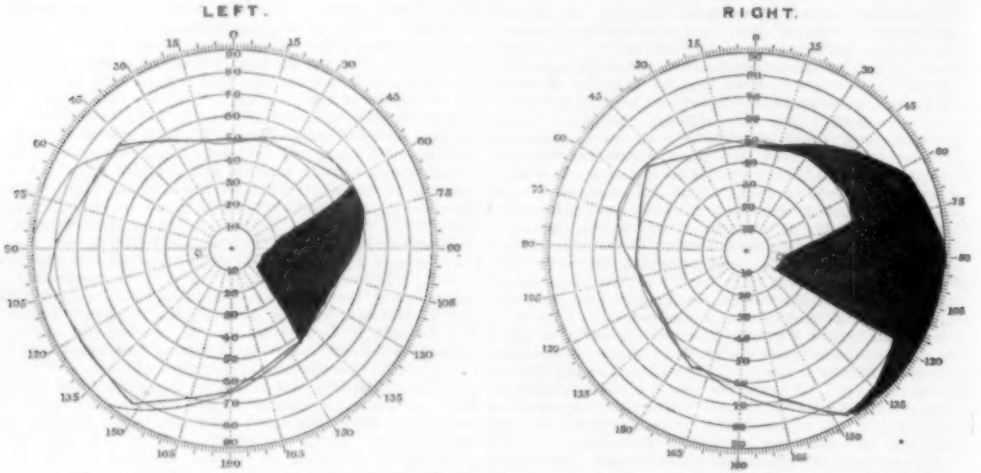
CASE 2. *Metastases to brain secondary to carcinoma of the bladder; occasional hæmaturia the only symptom of the primary disease; headache of some months' duration and followed by ocular paralysis and double optic neuritis.*—The patient, a woman aged 39 years, came to hospital complaining of pains in the head, "worse than an ordinary headache." The pains had troubled her for two or three months and recently had "caused" her to see double. The personal history was one of good general health, though in the course of the inquiry the patient stated that she had "for years"

passed blood in the urine "every two months." Examination showed homonymous diplopia increasing to the right, though no manifest defect in the action of the right external rectus muscle could be appreciated; and the optic discs were regarded as "definitely suspicious." Otherwise there were no evidences of organic disease and in particular the urine contained neither albumin nor blood. The patient declined admission to the hospital but returned in a fortnight's time with obvious defect in the action of the external rectus of each eyeball and with marked double optic neuritis; the urine now contained blood, but no tube casts or other renal elements could be found. After admission to the ward headache and vomiting were troublesome symptoms, but beyond the ocular paralyses and the optic neuritis nothing further was discovered; and in the course of some ten days the patient became comatose and died. In view of the urgency of the cerebral symptoms no systematic attempt was made to examine the bladder, and the single fact of hæmaturia when taken together with the somewhat indefinite history of the bleeding contributed by the patient, caused this aspect of the case to receive less than its due share of attention. Yet at the post-mortem examination it was found that the cause of the hæmaturia—namely, a malignant ulcer at the fundus of the bladder—was the starting-point of the whole train of subsequent symptoms. For in the cortex of the parietal lobe of the left cerebral hemisphere was a considerable malignant tumour (carcinoma) and several small nodules of malignant growth were found scattered in the cortical substance of both hemispheres. There were no growths at the base of the brain and the paralysis of both sixth nerves must have been due to the general increase of the intracranial pressure consequent on the growths in the upper part of the cerebrum—an illustration of the familiar fact that a sixth nerve paralysis has little or no localising value. Some nodules of malignant tissue were found in each lung.

Here, as in the first case, the primary malignant disease caused little disturbance. Indeed, it was only when headache became troublesome that the patient thought it necessary to seek medical advice. Further, the headache had been in existence for two or three months before objective evidence of organic intracranial disease could be detected. And even then the connexion between the hæmaturia, on the one hand, and the cerebral symptoms on the other, was far from obvious. The case may thus be placed as a parallel to those instances of mammary cancer in which the primary tumour is not recognised and in which, therefore, the interpretation of symptoms arising as a result of metastases to other organs is rendered difficult or impossible.

CASE 3. *Malignant disease of the lower bowel followed by right homonymous hemianopsia.*—In this instance there was no uncertainty in the diagnosis of the primary growth, as the patient, a man aged 60 years, had been operated on for malignant disease of the lower bowel. Shortly after the operation he complained that he could not see to his right side and on taking his visual fields the charts as shown in the illustration were obtained. In view of the right homonymous hemianopsia it seems certain that the patient was the victim of secondary malignant disease in the hinder part of the left visual tract and the incompleteness of the visual defect suggests the left half vision centre in the occipital lobe as the probable site of the secondary lesion. There was, at the time the charts were taken, no optic neuritis or other sign of cerebral disease. Unfortunately, the patient could not be traced at a later date and thus the subsequent developments can only be surmised. Though the case seems free from diagnostic difficulties it is not without interest in the discussion of involvement of the nervous system secondary to malignant growths in the viscera of the chest and abdomen.

CASE 4. *Malignant disease of lung; metastasis to femur.*—In the latter part of the paper already quoted Professor Osler refers to metastases to the bones secondary to cancer of the breast and here again the sequence may find its parallel in cases of malignant visceral disease. In a patient recently under observation, a man, aged 62 years, the diagnosis of malignant disease at the base of the left lung came to be doubted, if not by the medical attendants, at least by the patient's friends, in consequence of the cessation of all active symptoms, and of some improvement in the patient's general condition during a period extending over several months. Somewhat suddenly, however, as the patient was walking across his room, he became conscious of a severe pain in his left hip and of inability to use the limb. There was great tenderness over the neck of the femur but no actual tumour could be detected. The patient, however, never regained power over his limb and, without much evidence of renewed activity in the diseased lung, gradually lost strength and died about three months after the above event. The absence of any definite tumour of the thigh cannot be regarded as sufficient to neutralise the presumption that the patient was the victim of a secondary malignant growth in the upper part of the femur and that to this the pain, tenderness, and helplessness of the limb must be directly credited. In this case the metastasis was an occurrence which, so far from confusing the diagnosis of malignant disease of the lung, strengthened that opinion at a time when the general condition of the patient appeared to bring the original view more or less definitely under suspicion.




Charts showing incomplete right homonymous hemianopsia. The eccentric continuous line indicates the limits of the average normal field of vision.

*References.*—In addition to Professor Osler's articles (American Medicine, April, 1901, Brit. Med. Jour., Jan. 6th, 1906), and to the records quoted with these, recent interesting examples of malignant metastases to the brain and spinal cord have been reported by Spiller and Wisenburg (Journal of Nervous and Mental Disorders, August, 1906), and by Pinatelle and Cavaillon (quoted in Epitome,

Brit. Med. Jour., July 14th, 1906). The following may also be consulted: Tumour in Wall of Heart Secondary to Cancer of Œsophagus, Travers Smith, Brit. Med. Jour., Jan. 27th, 1906; Secondary Carcinomatous Growths simulating Tuberculous Hip-joint Disease and Miliary Tuberculosis, R. E. Lord and W. Buckley, Ibid., Jan. 27th, 1906; Secondary Malignant Disease limited to the Left Lobe of the Liver and the Suprarenal Capsules, C. O. Hawthorne, Glasgow Medical Journal, February, 1896; Cancer of the Stomach with Extension to the Lymphatic System through the Thoracic Duct, H. G. Turney, Transactions of the Pathological Society of London, vol. xliv.; Mitchell Stevens, Brit. Med. Jour., April 20th, 1905; and Nathan Raw, Ibid., June 14th, 1905.

## A CASE OF PARATYPHOID FEVER FOLLOWING THE REMOVAL OF AN OVARIAN CYST.

BY WILLIAM THYNE, M.A., M.D. EDIN.,
SURGEON TO THE VICTORIA COTTAGE HOSPITAL, BARNET; AND MEDICAL SUPERINTENDENT OF THE BARNET ISOLATION HOSPITAL.

A WOMAN, aged 38 years, was admitted to the Victoria Cottage Hospital, Barnet, on Dec. 30th, 1906. On Jan. 8th, 1907, assisted by Mr. W. H. Elam, I removed an ovarian cyst of about the size of a football with doubly twisted pedicle and omental adhesions. The patient appeared to make an excellent recovery until the 21st (23 days after admission), when her temperature began to rise, reaching 101° F. on the evening of the 23rd, and continuing between 100° and 101° until the 29th, when it reached 102°; her appetite became impaired and she had a feeling of indefinite illness. The temperature became continuously higher, reaching 103° on the 31st. The bowels, which had previously been constipated, acted once daily, the stools being loose and of pea-soup consistency and appearance. Rose-coloured spots similar to those seen in typhoid fever appeared on Jan. 28th and for a few days following. No enlargement of the spleen could be detected. No cause for her symptoms could be traced to the operation. On the 30th the Clinical Research Association reported: "This serum does not show the reaction characteristic of typhoid fever." On Feb. 4th a similar report was received, but with the suggestion that "possibly the case is one of paratyphoid." On the 5th the patient was removed to the isolation hospital. On the 8th the Clinical Research Association reported: "With paratyphoid strain B, this serum gives clumping reactions with dilutions of 1-10, 1-25; with a 1-50 test the reaction obtained was very feeble. We again tried the serum with two different strains of B. typhosus. No reaction was obtained even with the 1-10 dilution. The results obtained with the paratyphoid strain were not sufficiently marked to be conclusive." On the 9th a report from Dr. G. L. Eastes stated: "A moderate amount of clumping was obtained when mixing the blood with a broth culture of the paratyphoid bacillus of Brian and Kayser in all dilutions up to 1 per cent." On Feb. 5th the evening temperature reached 103°; on the 6th, after 16 days of fever, it dropped to 98·6° and did not rise again. The fall of temperature was accompanied by profuse sweating. On the 20th the patient was discharged recovered from the hospital.

I have considered the case worthy of record, it being the first of its kind that I have come across. It is probable that examples of this disease occur more frequently than is supposed and many must be overlooked. When it is diagnosed and treated as typhoid fever no harm can result, but when, as in my case, Widal's reaction for typhoid fever is repeatedly found to be negative and the case is a mild one the diet is likely to be less restricted than it should be, disinfection may be neglected, and the consequences may be serious. It is only by a bacteriological examination of the blood that typhoid and paratyphoid fevers can be distinguished. The fact that the pedicle was doubly twisted adds additional interest to the case.

High Barnet.

ROYAL METEOROLOGICAL SOCIETY.—The annual dinner of the Royal Meteorological Society will be held at the Trocadéro Restaurant, Piccadilly, W., on Tuesday evening, June 18th. The dinner will be at 7.0 P.M. and the price of the tickets will be 20*s.* with wine or 8*s.* 6*d.* without wine. Application should be made to the assistant secretary, 70, Victoria-street, Westminster, S.W., by June 4th.

## PERFORATION IN TYPHOID FEVER AND ITS RELATION TO THE BLOOD PRESSURE;

WITH A REPORT OF FIVE CASES.

BY A. LEWIN SHEPPARD, M.B., B.S. DURH.,
HOUSE PHYSICIAN TO THE BRISTOL ROYAL INFIRMARY.

ONE of the signs of perforation of the intestine in typhoid fever that have recently been brought to our notice is a rise of blood pressure immediately following the catastrophe At present, however, so few records have been published that Janeway[1] remarks that "full reports of all such cases should be made, that the value of the blood pressure chart, both as positive and negative evidence of perforation, may be established."

During the past year I have had the opportunity of observing an epidemic of an exceptionally severe type, in which 45 per cent. of the fatal cases were due to perforation, and as the blood pressure was carefully watched in each instance the results should be worth recording. I am indebted to Dr. J. E. Shaw, Dr. F. H. Edgeworth, and Dr. A. B. Prowse, under whose care the cases were admitted, for allowing me to do so. Up to the present time five cases have been reported by Crile,[2] who found that the blood pressure rose in every case immediately after perforation, as his figures show.

| | | | | | |
|---|---|---|---|---|---|
| No. 1 ... ... | Blood pressure rose from 116 to 190 in four hours. | | | | |
| No. 2 ... ... | ,, | ,, | ,, | 84 ,, 110 promptly. | |
| No. 3 ... ... | ,, | ,, | ,, | 116 ,, 165 in two hours. | |
| No. 4 ... ... | ,, | was 165. | | Previously unknown. | |
| No. 5 ... ... | ,, | ,, | 208. | Previously unknown. | |

The same observer found the average blood pressure in 115 cases of enteric fever to be 104, varying between 138 and 74, the pressure as a rule gradually decreasing till the fourth or fifth week, when the average was 96 and 98.

In 41 cases where I made observations during, or about, the fourth week, the average blood pressure was 98. Briggs[3] also records a case in which the blood pressure rose from 106 to 144 in four hours and four hours later the patient suddenly developed typical signs of perforation. This anticipation he explains by suggesting that the resultant inflammation did not reach the parietal peritoneum for eight hours after the accident. He also mentions a case showing a negative result, in which the pulse rose from 152 to 170, and the leucocytosis from 7000 to 17,000, with no rise of blood pressure and no perforation.

The following is a brief summary of the cases I have observed.

CASE 1 (under the care of Dr. Shaw).—A man, aged 20 years, was admitted on the twenty-first day. It was a typical severe case. On the twenty-fifth and two following days there was slight hæmorrhage in the motions. On the twenty-ninth day the blood pressure was 88. On the next day at 4 P.M. the temperature was 100·2° F. and the pulse was 120. At 4.30 he complained of abdominal pain and at 6.30 the pulse was 140 and the blood pressure was 116. The pulse rose to 170 at 9.0, but at 10.30 it had fallen again to 130 and the blood pressure to 90. Leucocyte counts made at 8.30 and 10.30 were 5330 and 5740 respectively. The surgeon then saw the case but did not advise operation as the patient appeared better. 26 hours later laparotomy revealed a large perforation, at which time the pulse was 136, the blood pressure was 92, and the leucocytes had only risen to 5945. The patient died two hours later.

CASE 2 (under the care of Dr. Shaw).—A girl, aged 19 years, was admitted on the sixteenth day. The attack was a mild one. The blood pressure was 97. She got worse till the forty-third day, when she had a rigor, after which the temperature fell during the night from 103·2° to 97·8° F. The pulse was 116, the blood pressure was 94, and a leucocyte count gave 3660. On the forty-seventh day at 5.15 P.M. she said that she had had pain since 4 o'clock, but it was now worse. At 5.30 the pulse had risen to 150 from 120 and the temperature to 102° from 100°, and there was a leucocytosis of 11,160. The blood pressure was not below 110, but the patient was too restless and the pulse too small to allow an estimation with any

[1] The Clinical Study of Blood Pressure, p. 226.
[2] Journal of the American Medical Association, 1903, vol. xl., p. 1292.
[3] Boston Medical and Surgical Journal, 1903, vol. cxlix., p. 343.

accuracy. Laparotomy at 6 P.M. showed a small perforation and about six inches higher up the gut a patch of less recent peritonitis, which probably meant that there had been a slight leakage from another ulcer four days before, when the rigor had occurred. The patient died in four days. Widal's reaction in this case was always negative, though tried five times.

CASE 3 (under the care of Dr. Shaw).—A man, aged 24 years, was admitted on the fifteenth day. The blood pressure was 136. It was a typical case. On the twentieth day he complained of abdominal pain at 5 P.M. The blood pressure was 120, the pulse was 94, and the temperature was 101·2° F. At midnight the temperature was 104·8° but the pulse had not risen. 12 hours later the pulse was 80, the temperature was 98·2°, and the blood pressure was still 120. The leucocyte count was 8800. The pain continued and he vomited. The diagnosis was doubtful but in any case he was considered to be too bad to operate. Signs of peritonitis became definite and the patient died on the next day. There was no post-mortem examination but perforation had undoubtedly occurred.

CASE 4 (under the care of Dr. Prowse).—A man, aged 34 years, was admitted on the twenty-fifth day. It was a very severe case. Slight hæmorrhage occurred on the twenty-ninth day. The pulse was 124, the temperature was 105° F., the blood pressure was 112, and the leucocytes were 6400. Some pain was present. The motions became of normal consistency and well formed about the fortieth day. On the forty-third day he had a rigor and was distended, sweating, and delirious. The blood pressure was low but was not able to be estimated exactly owing to the restlessness of the patient and the smallness of the pulse. The leucocyte count was 11,600. There was subcutaneous hæmorrhage on the right side of the buttock. There was hæmorrhage in the motions on the forty-fourth, forty-sixth, and fifty-third days; and on the sixtieth day, the blood pressure then being 94, there were three violent hæmorrhages from the bowel, about three pints in all. He collapsed and died. The pulse could not be felt.

CASE 5 (under the care of Dr. Edgeworth).—The patient was a youth, aged 18 years, who had walked about till admission on the fourteenth day. It was a typical case. On the seventeenth day the blood pressure was 90. On the nineteenth day the pulse was 112; there was very slight abdominal pain all night. At 5 A.M. the pulse was 116 and the temperature was 101° F. At 7 A.M. the pulse was 152. At 8.30 the pulse was 158, the temperature was 101·2°, the blood pressure was 92, and the leucocyte count was 4800. The patient died at midday. Post mortem several acute and deep ulcers were found. One had perforated.

The accompanying table shows the various symptoms as they followed perforation.

Looking at the table we see that the *pulse* rose in four cases, and in No. 5 was the only marked feature. *Peritoneal symptoms* were diagnostic in one case, while some pain was present in all. The *temperature* rose in three cases but fell later. *Leucocytosis* was marked in Case 2, but here other signs were also unmistakeable. In the other cases there could have been no great rise although the previous figures were not known. The *blood pressure* with which we are chiefly concerned here was in no case the only sign, and no great rise was recorded in any, the maximum change being only 28 mm. Hg. In Case 2 the pressure probably exceeded 110, but here, as in Case 1, there were other signs equally valuable and more decisive.

*Conclusions.*—From these results the rise of blood pressure does not appear to be as certain, and consequently as valuable, a sign as Crile's figures would indicate. The signs of perforation, however, are notoriously uncertain; and in no case of typhoid fever with fairly sudden abdominal pain, combined with any one well-recognised sign (providing there is no other ascertainable cause), should we hesitate to diagnose a perforation. Amongst these signs should certainly be placed a rise of blood pressure. It seems quite as constant as leucocytosis, and is certainly more easy to observe and chart throughout the course of the disease. A disadvantage that may arise, as I found in Case 2, is that owing to restlessness it may be impossible to make an accurate estimation. It will not be common to meet with cases like No. 4, where violent hæmorrhage occurring with perforation renders the pulse imperceptible. In any such case, however, the seriousness of the condition is obvious and the loss of the knowledge of the blood pressure immaterial. All my estimates were taken with Martin's modification of a Riva-Rocci sphygmomanometer.

In the diagnosis of perforation we must remember that the signs are nearly always most marked about two hours after the accident has occurred, after which they are usually found to return to their previous conditions and consequently impressions likely to be made on those who see the case at a later stage are often liable to be misleading. The change in blood pressure is no exception to this rule as the tendency seems for it to fall again to its original level as rapidly as it has risen.

TABLE SHOWING THE VARIOUS SYMPTOMS AS THEY FOLLOWED PERFORATION.

| Case. | Pain. | Pulse-rate. | Temperature. | Leucocyte count. | Blood pressure. | Peritonism. | Vomiting. | Collapse. |
|---|---|---|---|---|---|---|---|---|
| 1 | Slight. | 120 to 170 in 4½ hours, followed by fall to 130. | 100·2° to 104° F. in three hours, followed by fall. | 5945 after 30 hours. | 88 to 116 in two hours, followed by fall to 90. | Slight. | No. | No. |
| 2 | Yes. | 120 to 150 in two hours. | 100° to 102° F. in two hours. | 3600 to 11,160 in two hours. | 94 to 110 (or more) in two hours. | Decided. | No. | Yes. |
| 3 | Slight. | 94; no change. | 101·2° to 104° F. in seven hours, followed by fall to 98·2° 12 hours later. | 8800 maximum. | 120; no change. | Late. | Yes. | No. |
| 4 | Yes. | 128 to 160; running. | 98° to 97° F. | Previously 11,600. | Impossible to estimate. | Yes. | No. | Extreme. |
| 5 | Slight. | 116 to 150 in two hours. | 101·2° F.; no change. | 4800 maximum. | 92; no change. | Slight. | No. | Late. |

Post mortem there were adhesions between the intestines and abdominal wall. All ulcers but three had healed. The base of one was entirely gone and the abdomen was full of blood. The other two ulcers had destroyed the coats of the bowel down to the peritoneum. In this case the perforating symptoms were masked by the hæmorrhage, but observations made during the course of the illness were interesting, though negative on account of the continual weakness of the pulse.

With the exception of one case with severe bronchitis in an old woman in whom the pressure rose from 114 to 130, the negative evidence in the above cases and in others I have investigated has gone to prove that there is no sudden rise of blood pressure in any of the other complications—in which this sign probably stands by itself—as distension, slight pain, leucocytosis, and a rise of pulse may each occur in other circumstances. Summing up, therefore, we may generally regard a rise of blood pressure as positive evidence of perforation; although a stationary pressure is no indication that the catastrophe has not occurred.

Royal Infirmary, Bristol.

EVERSFIELD CHEST HOSPITAL, ST. LEONARDS-ON-SEA.—At a meeting of the committee of the above-named hospital in the offices of the honorary solicitor, Mr. J. Sladen Wing, 1, Delahay-street, Westminster, held on April 27th, Mr. Edmund S. Hanbury being in the chair, to consider the necessity of increasing the accommodation, enlarging the out-patient department, and considerably widening the existing balconies that more patients might be able to undergo the open-air treatment than at present is possible, the solicitor announced that a client of his had offered £1000 to help to carry this project into execution.

# STATUS LYMPHATICUS.

BY LOUIS VINTRAS, M.D. DURH.,
PHYSICIAN TO THE FRENCH HOSPITAL AND DISPENSARY.

THE status lymphaticus is a well-recognised condition on the continent, and especially in France, where "*nature lymphatique*," "*constitution lymphatique*," and "*sujet lymphatique*" are current terms. As its name implies, the status lymphaticus is more a constitutional condition than a disease *per se*. In the "Manual of Practical Medicine" of Hufeland, physician to the King of Prussia, translated into French by Jourdan in 1848, there is a concise and very fair description of this condition in the chapter on Diagnosis. "Laxity of the fibres, flesh spongy and flabby, pastiness, paleness, want of warmth; subjects having this constitution are sensitive to cold and in complexion ordinarily fair; they have a disposition to catarrhs, to accumulations of mucosities in the organs of the head, of the chest and of the pelvis, to serous and lymphatic extravasations, to discharges and passive congestions, to incomplete crises and to a general tendency for their ailments to assume a chronic character." Hufeland makes a useless division between what he calls watery or relaxed constitutions and lymphatic or mucous constitutions, since he gives the same description for both and they are evidently one.

Though scientists have long been fully alive to the importance of this condition, it is astonishing how small is the attention which has been given to it; but this probably arises from the paucity of our knowledge of the diseases, and, indeed, of the physiology, of the lymphatic system. In some way or other the lymphatic diathesis has during the last 20 years or so receded from the attention of the medical mind and has been variously mixed up with neurotic, scrofulous, tuberculous, and even syphilitic conditions. The confusion with neurotic tendencies has only been the result of the overwhelming interest taken in nervous diseases and a readiness to include every morbid condition insufficiently understood in this convenient and fashionable category. But the lymphatic and neurotic temperaments have but few points in common and the former subjects are less prone than many others to neurotic affections. Of course, a morbid condition of the nervous centres may influence the lymphatic system as it may influence the circulatory or muscular systems or any organ of the body.

That there is no connexion between the lymphatic diathesis and the other conditions enumerated Trousseau emphatically stated already in 1868, in his "Clinique Médicale de l'Hôtel Dieu de Paris." In the ninety-sixth lecture, speaking of the etiology of adenie, he says: "Can we attribute the lymphatic affection to any known diathesis? Can the constitutional diseases known as scrofulous, tuberculous, cancerous, and syphilitic be invoked to explain the generalised hypertrophy of the ganglions? Evidently no ....." And after giving his reasons for this opinion he continues: "We are thus constrained to admit the existence of a new, *special* diathesis, unknown in its essence, and which we will call *lymphatic diathesis*. This diathesis would be characterised by the tendency in certain subjects to present, under a determining cause, ganglionic enlargements at first localised and which become generalised in the space of from eighteen months to two years." Trousseau here speaks as though adenie were the only morbid manifestation of this diathesis, but we have made progress since those days and have a wider perception of the range of affections of the lymphatic system. It is this question of glandular enlargements which has brought about the confusion between this and other constitutional conditions, for it has been sought to establish a connecting causative link between the idiopathic enlargements of adenie and the secondary enlargements of other diseases due to irritation or absorption. There can be no such connecting link and this once established clears the way for a definite understanding of the particular condition under consideration. The lymphatic diathesis is not easy to diagnose but the following data will afford some help. It occurs mostly among tall, rather sparsely built subjects, with fair, clear skins, rather pale, but not with the dead white pallor of anæmia. The pastiness alluded to by Hufeland is only a much later symptom and may not be present at all. They are of a slow sedentary habit of life, they are mostly highly intelligent but in a deep earnest way; they are self-concentrated, shy with strangers, and of a retiring disposition, but genial and brilliant when at their ease among friends. They are very sensitive to climatic influences and they feel the cold keenly. They are in appearance listless and careless and give the impression of being indifferent to things in which inwardly they are greatly interested. They are emotional but suppress their emotions. Their fits of anger are concentrated and they are still and turn to a death-like pallor, where others flush red and fly into a passion. There is nothing about them of the spasmodic excitability of the nervous temperament, nor of the hopefulness of the tuberculous temperament. Their pulse is usually slow, sometimes very slow, averaging as low as 45 to 50; but under the stress of worry or emotion their pulse-rate will rise to above 100 and remain so for days and even weeks without any apparent ill-effects. It is the same with the heart beats, and it is this which constitutes one of the chief dangers of this condition. Under some strong emotion, but often without any cause, the ratio of the heart beats will double or treble, not in the irregular way, typical of nervous palpitations, but with a steady rise, the heart maintaining a perfectly regular but highly accelerated action. I believe that in these cases the flabby walls of the heart become suddenly dilated and as suddenly return to their former state. It is quite comprehensible that during such a paroxysm any interference with the nerve centres may cause the dilated walls of the heart to cease contracting. I think that this accounts for many cases of sudden death where no adequate pathological lesion seems to exist. In such subjects the muscles are mostly semi-relaxed, and are rarely in a state of tension; they never, so to speak, stand at attention. They have a peculiar stoop, which is not due to any deformity of the chest or any weakness of the spine, but to this relaxed condition of the muscles of the back and neck. The skin is also relaxed and soft, with a marked tendency to local excessive action of the sweat glands, especially those of the hands and feet. The hair is thin and silky and falls early. There are a lack of brilliancy in the eyes, which are often watery, and a distinct want of fixity in the gaze due merely to the flabby and usually relaxed condition of the muscles of the eyeball. The same condition of the facial muscles often gives a vacant expression which disappears when the attention or interest of the subject is roused. In fact, whereas we describe the nervous subject as being overstrung we may aptly describe the lymphatic subject as being generally understrung.

Such subjects it is in whom a cold in the head or an attack of bronchial catarrh will drag on for weeks and even months, in spite of treatment, and then cease suddenly without any reason; in whom gonorrhœa, notwithstanding the greatest care, will degenerate into gleet, and after months, or even years, finally disappear in the same inexplicable way or, on the other hand, set up joint trouble, the effects of which may be irremediable. An attack of pleurisy is particularly dangerous to the lymphatic subject as the pleural cavity when emptied will fill again and again with despairing persistency. With them the recovery from acute diseases is always tedious and they are subject to relapses. A slight injury will often cause the gradual formation of a cold abscess which may attain a size out of all proportion to the cause. It is unnecessary here to multiply these examples and I will only add that, if the lymphatic temperament has some very decided disadvantages, it has also certain advantages, for as far as my experience goes it seems less liable than other constitutions to neurotic and tuberculous affections. The status lymphaticus has also a distinct tendency to improve with advancing years, and where it has caused no serious organic lesions the subject will comparatively feel stronger and enjoy better health during the second than he has during the first part of life.

Regent's Park-road, N.W.

WHITBY COTTAGE HOSPITAL.—In THE LANCET of Dec. 22nd, 1906, p. 1760, we mentioned that the whole of the honorary medical staff of this hospital had resigned owing to differences of opinion between themselves and the governing body of the institution. Since that date conference after conference has been held between the medical men and the governors during which time the hospital was closed. On May 4th, however, a special meeting was held in the Church House, Whitby, at which it was announced that as a result of the final conference new rules had been drawn up to which both sides agreed. These rules were passed after some minor alterations in details had been made. The dispute may now, therefore, be considered as at an end, though it necessitates the closing of the out-patients' department, for which "Captain Cook's" House was recently bought.

# A Mirror
OF
# HOSPITAL PRACTICE,
## BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum allorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

## BRADFORD ROYAL INFIRMARY.

### A CASE OF CONGENITAL DIVERTICULUM OF THE STOMACH AND DUODENUM IN A PHYSIOLOGICAL HOUR GLASS STOMACH.

(Under the care of Mr. W. H. HORROCKS.)

FOR the notes of the case we are indebted to Dr. A. W. Falconer, late house physician.

The patient, a male, aged 54 years, was admitted into the Bradford Royal Infirmary on Sept. 18th, 1906, under the care of Mr. W. H. Horrocks, suffering from a self-inflicted gunshot wound of the head and died within a few minutes of admission.

On opening the abdomen the stomach was found lying obliquely extending downwards and to the right, the pylorus being hidden under the liver. In the middle of the greater curvature was a marked constriction dividing the stomach into two almost equal parts. On removal the stomach was quite empty, it having previously been washed out under the impression that the man might have taken poison. It was markedly bi-saccular, the division being caused by a tucking in of a portion of the greater curvature, forming a tube about 2½ inches in length, which felt thicker than the rest of the stomach wall, the lower curvature showing no indentation. Arising from the pyloric canal on the greater curvature was a diverticulum about half an inch in length, and on the upper wall of the duodenum just past the pylorus was a similar diverticulum somewhat less in size. The measurements of the stomach when laid flat on the table were as follows. Length from fundus to pylorus 12 inches, vertically in cardiac portion 5½ inches, at the constriction 3 inches, and in the pyloric portion 4½ inches. On opening the stomach the thumb could be passed through the constriction in the middle of the stomach and the tip of the little finger insinuated through the pylorus. The diverticulum in the stomach admitted the forefinger and a distinct thickened ring of tissue was felt nipping the finger at the base of the duodenum. It was three-quarters of an inch in diameter and three-quarters of an inch in length. The duodenal diverticulum was half an inch in diameter and half an inch in length, and the same ring, though less marked, was felt at the entrance to the diverticulum. There were no adhesions or any signs of inflammation. The diverticula could be readily inverted and were covered by mucous membrane, which showed no tendency to be thrown into folds. The mucous membrane of the stomach in the cardiac portion was slightly injected; in the pyloric portion it was normal. On the posterior wall at the cardiac end of the pyloric half there was one small scar involving the mucous and submucous coats. The mucous membrane in the constricted portion was thrown into numerous longitudinal folds and felt much thicker than in the rest of the stomach. Sections were made through the entrance to the stomach diverticulum, and at the entrance to the diverticulum great thickening of the muscular coats was found, involving both the circular and longitudinal folds but to a somewhat greater extent the circular folds. The thickness of the muscular wall at this part was $\frac{3}{16}$ths of an inch. Just past the muscular thickening the normal stomach mucous membrane was suddenly replaced by a glandular tissue consisting of lobules composed of alveoli lined by polyhedral cells closely resembling those of the pancreas. Between the lobules there was some slight small cell infiltration. Sections were also made through the constricted portion of the stomach which was found to be normal, the muscular coat not being thickened and the apparent increased thickness of the mucous membrane being due to the number of its folds.

*Remarks by* Dr. FALCONER.—The occurrence of congenital diverticulum of the stomach is of extreme rarity. It differs from the very much more common variety of acquired diverticulum in the fact that it is composed of all the coats of the stomach and not only of the mucosa and submucosa, as most of the acquired or false diverticula are; and, further, the congenital diverticula sometimes contain glandular tissue foreign to the stomach. Weichselbaum [1] records an almost identical case with the present one in which at the bottom of a diverticulum near the pylorus there was a nodule of the size of a hemp seed which showed the structure of the pancreas and on the anterior duodenal wall an accessory pancreas as large as a bean covered by the serous coat. Accessory pancreatic tissue in the stomach wall has also been recorded by Klob, Wager, and Gegenbauer. In the duodenum alone accessory pancreatic tissue is rather more common, cases having been recorded by Weichselbaum and Zenker and Mr. Low of the Aberdeen Anatomical Department also tells me he has seen several such cases (unpublished). The occurrence of hour-glass constriction of the stomach associated with an obvious congenital diverticulum might at first sight suggest the possibility that they were both congenital conditions but I do not think there are the slightest grounds for such a supposition. It showed all the characteristics of the condition for which Professor Cunningham has suggested the term physiological "hour-glass stomach," the main points of which are that the constriction is solely due to a tucking-in of the greater curvature, the lesser curvature showing no abnormality and the presence of marked longitudinal folds of the mucous membrane suggesting that the condition is but temporary. Professor Cunningham [2] concludes that the condition is due to a localised spasmodic contraction of the muscular coat which most commonly arises at the physiological subdivision of the stomach into a cardiac and pyloric portion but which may arise at any part between this and the pylorus.

I am indebted to Mr. Horrocks, senior surgeon to the Bradford Royal Infirmary, for permission to publish this case.

[1] Nebenpankreas in der Magenwand, Reichert's Archives, 1860; quoted from Nothnagel.

[2] The Varying Form of the Stomach in Man and the Anthropoid Ape, Transactions of the Royal Society of Edinburgh, vol. xlv., Part 1.

# Medical Societies.

## PATHOLOGICAL SOCIETY OF LONDON.

*The Morbid Histology of the Suprarenal Glands.—A Case of Inoculated Syphilis in the Chimpanzee.—A Rare Variety of Cardiac Degeneration.*

A MEETING of this society was held on May 7th, Dr. P. H. PYE-SMITH, the President, being in the chair.

Dr. F. A. BAINBRIDGE and Mr. P. R. PARKINSON communicated a paper on the Morbid Anatomy of the Suprarenal Glands. They said that suprarenal glands obtained from 50 consecutive post-mortem cases had been examined by Kohn's method; the depth of the chromaffin stain in the medulla of the glands indicated the amount of adrenalin present. Control observations showed that the amount of chromaffin substance was not appreciably lessened during the interval between death and the post-mortem examination. It was found that the adrenalin had entirely disappeared in cases of death from acute general infections or from post-operative shock, whereas it was still present in normal or almost normal amount in chronic diseases. Several cases were examined which showed arterial disease after death and in which the blood pressure during life had apparently been raised. In these the suprarenals were sometimes slightly enlarged, but no adenomatous growths were observed; the depth of the chromaffin stain was very intense and the amount of adrenalin stored in the medulla appeared to be excessive. The observations suggest that in acute disease, where the blood pressure was low, the suprarenal glands yielded up their store of adrenalin, whereas in conditions associated with high blood pressure adrenalin existed in the suprarenals in normal or increased amounts.

Dr. A. S. GRÜNBAUM read notes and showed specimens of

a case of Anthropoid Syphilis. A male chimpanzee, inoculated on the right eyebrow, developed a chancre after 14 days and a secondary rash, principally on the face, after nine weeks. Treponema pallidum was found in both lesions but not after the thirteenth week. The animal died just 11 months after inoculation. Two months before death it had a fit of Jacksonian epilepsy, followed a week later by a second fit. The temporary paralysis of the left side and the loss of speech disappeared after a few hours, but paresis and twitching of the limbs persisted, although diminishing, until death. There was no optic neuritis. Post mortem numerous minute hæmorrhages, confined almost entirely to the right side and chiefly in the cortex, were found in the brain along the vertex from front to back. They were due to the rupture of small, probably preceded by thrombosis of the smallest, vessels. Fibroid degeneration of, and leucocytic infiltration around, vessels could be seen in some parts. There was no meningitis. In the liver were small areas of commencing infiltration and fibrosis. Typical syphilitic fibrosis was present in the testes. There was no affection of the bones, and except for some colitis and old tuberculous glands the other organs were healthy. The serum sent to Breslau was reported from Neisser's laboratory to show the presence of syphilitic antibodies. No treponemata were found in either the cerebro-spinal fluid or the organs.

Dr. W. O. MEEK showed microscopical preparations from a Heart the seat of Diffuse Calcareous Degeneration. The calcareous deposit was in the form of fine granules partially soluble in dilute acids. The etiology of the condition was obscure, the intervening areas of cardiac muscle being normal and no vascular changes being found to account for it.

## OBSTETRICAL SOCIETY OF LONDON.

*Intra-peritoneal Rupture of the Bladder occurring during Labour.—Malignant Vaginal Polypus Secondary to an Adrenal Tumour of the Kidney.*

A MEETING of this society was held on May 1st, Dr. H. R. SPENCER, the President, being in the chair.

Mr. C. R. PORTER read a short communication on a case of Intra-peritoneal Rupture of the Bladder occurring during Labour. The patient, a primipara, aged 32 years, who had never complained of previous bladder trouble of any kind, was seen 48 hours before labour had really commenced on account of vague pains which were referred chiefly to the sacral region and which were thought by her to be labour pains. There was then no undue distension of the bladder to be made out by abdominal examination. Urine had been passed that day. Two days later labour pains started in earnest but medical aid was not summoned until 12 hours had elapsed. The nurse in attendance gave a history that labour had been progressing in the ordinary way for about 12 hours when during a pain the patient suddenly cried out that "something had given way inside" and from that moment she became very ill indeed. When seen the patient looked very ill, the pulse was very rapid, the tongue was dry, and the abdomen was much distended and tympanitic. Ordinary labour pains were not to be distinguished from the acute general abdominal pain complained of, though some contractions of the uterus were still to be made out. The child was lying in the first vertex position, the os uteri was fully dilated, and the head was well down in the pelvis. Labour was not apparently obstructed except by the absence of efficient uterine contractions. It was thought that some grave intra-peritoneal catastrophe had complicated labour, and in view of the serious condition of the patient chloroform was at once administered and a full term, well-nourished male child was easily delivered with forceps. After some post-partum hæmorrhage the uterus contracted down well. The umbilical cord was nearly pulseless on delivery and the child died in about an hour. The general abdominal pain ceased to be complained of after delivery. The general condition of the patient had not improved five hours afterwards, the pulse and respiration being still very rapid, and the abdominal distension considerable. 24 hours after delivery the patient had not passed urine, had vomited frequently, and was obviously worse. It was decided to risk her removal to hospital eight miles distant. On admission she was much collapsed. A catheter specimen yielded about four ounces of almost pure blood. The patient was anæsthetised and the abdomen was opened in the middle line below the umbilicus. A considerable quantity of urinous fluid mixed with serum escaped from the general peritoneal cavity. The stomach was enormously distended with gas which was evacuated by a small trocar thrust into the anterior wall of the stomach after extending the abdominal incision upwards. This made examination much easier and a small vertical rent about one and a half inches long was found in the upper and posterior aspect of the bladder to the right of the middle line. This was closed by Lembert sutures and the abdomen sewn up with silkworm gut, the lower angle of the wound being drained with a large rubber tube. The patient was not very markedly worse for the operation but died from shock about six hours later. No necropsy was allowed.

Mr. ALBAN H. G. DORAN read a paper on a case of Malignant Vaginal Polypus secondary to an Adrenal Tumour of the Kidney. A married uniparous woman, aged 40 years, suffered from rigors and sweats in September, 1906. A mass was detected in the vagina and a small tumour in the right iliac fossa. The vaginal growth was a racemose body attached by a well-defined pedicle to the lower part of the anterior wall of the vagina; its lobules, more or less necrosed, were shed from time to time. In November Mr. Doran removed the abdominal tumour, which proved to be a malignant adrenal growth in the upper part of the right kidney. The patient declined to allow a second operation for the extirpation of the vaginal growths. She survived the nephrectomy three months. After death secondary deposits were discovered in the liver and right lung; their presence in the lung had been diagnosed before death. On microscopical examination it was found that the vaginal tumours, as well as the growths in the liver and lung, were of the adrenal type and therefore secondary to the tumour in the kidney.—Dr. BECKETT OVERY described a similar case in which a polypoid mass had been found attached to the anterior vaginal wall. This was removed and a large tumour in the right side of the abdomen was discovered. Two months later the vaginal growth had recurred and it was again removed. The patient died a month later. The post-mortem examination showed that the abdominal tumour was primary and was a malignant adrenal tumour starting in an adrenal rest. There were numerous secondary deposits in the liver and lungs, sections of which showed more or less typical adrenal tissue.—Mr. DORAN replied.

## EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

*Differentiation of the Varieties of Extra-systole.—Muscular Lesion occurring in Sprue.—Intubation of the Larynx in Laryngeal Diphtheria.*

A MEETING of this society was held on May 1st, Dr. GEORGE HUNTER, a Vice-President, being in the chair.

Dr. W. T. RITCHIE read a paper on the Differentiation of the Varieties of Extra-systole. After reference to the researches of Tawara and of Keith and Flack upon the muscular connexions between the superior vena cava, the auricles, and the ventricles, it was pointed out that an extra systole was the evidence of the heart's response to a heterotopic stimulus. The general characters of the pulse in extra-systolic irregularity were described and it was shown that by an analysis of graphic records demonstrating the sequence in which the auricles and the ventricles contract during an extra-systole and the time interval between their contractions on that occasion the initial point of heterotopic stimulation might be deduced. The distinctive features of the varieties of extra-systole were then described. According to the initial point of heterotopic stimulation three main varieties of extra-systole—the auricular, the auriculo-ventricular, and the ventricular—might be recognised. When an auriculo-ventricular extra-systole occurred the auricular beat might be premature as well as the ventricular, and the former might then precede, coincide with, or follow the latter, according to the portion of the auriculo-ventricular bundle first stimulated. It was suggested that the auricular beat preceded the ventricular in the case of supranodal and nodal auriculo-ventricular extra-systoles; when the mid-point, probably the main stem, of the bundle was the initial point of stimulation the auricular and ventricular beats coincided; in other cases of infranodal auriculo-ventricular extra-systoles, when the ventricular beat preceded the auricular, the heterotopic stimulus

probably proceeded from the ventricular ramifications of the auriculo-ventricular bundle. In the latter instance the auricular extra-systolic wave might be premature or the auricular rhythm might be unaltered. Cases of continued cardiac irregularity resulting from auriculo-ventricular extra-systoles in series were recorded and in conclusion the three forms of ventricular extra-systole—the retrograde extra-systole, the interpolated extra-systole, and that with a period equal to the succeeding physiological systole, as observed in cases of heart block—were described.

Dr. BYROM BRAMWELL read a communication on a hitherto undescribed Muscular Lesion occurring in Sprue, with a pathological report and microscopical examination by Professor Robert Muir.—Dr. GEORGE HUNTER, Dr. BLACK, and Dr. G. A. GIBSON took part in the discussion.

Dr. CLAUDE B. KER read a paper on Intubation of the Larynx in Laryngeal Diphtheria. He said that while in America, in France, and in most European countries intubation had been enthusiastically adopted as the operation of election in laryngeal diphtheria, it had not had many votaries in Great Britain. Only recently had it met with any serious consideration and even now those who preferred it to tracheotomy were few in number. The theoretical advantages of intubation over tracheotomy were: (1) that the patient continued to breathe *per vias naturales* and consequently there should be less chance of pulmonary sequelæ; and (2) that a cutting operation was avoided and no scar was left. No preparation was required and the patient was as a rule relieved in a few seconds. With tracheotomy, on the other hand, the parts chiefly involved in the obstruction were given complete rest and if the tube became dislodged it could be replaced by the nurse, whereas the intubation tube required a medical man to replace it. There was a great difference of opinion whether membranes were expelled more easily by one tube or the other. Larger pieces should theoretically be expelled through the tracheotomy tube; the intubation tube allowed more vigorous and natural coughing. Dr. Ker thought that the danger of plugging of the tube was exaggerated; if it became plugged it usually was expelled or could be pulled out by the nurse by traction on the string and in such an event a reasonable time usually elapsed before it had to be replaced. The danger of rolling up membrane in front of a tube in the act of intubating and so plugging the trachea was a more real one and had happened on several occasions in Dr. Ker's experience, always, however, without fatal result. Another objection was the possibility of infecting the trachea from the larynx by dislodging small portions of membrane by the tube. This objection, however, had no value since the introduction of antitoxin which prevented the extension of membrane if an adequate dose of serum had been administered. The diphtheritic membrane was so rapidly disintegrated after its employment that there was an unquestionable advantage to Dr. Ker's mind in adopting an operation which would tide the patient through a difficulty lasting only two or three days and which avoided the risks of tracheotomy. Since 1894 intubation had been the operation of election at the Edinburgh City Hospital, supplemented, when necessary, by a secondary tracheotomy. Dr. Ker's experience was limited to little more than 200 cases and until three years ago the mortality of the operation never fell below 40 per cent. It was interesting to note, however, that the death-rate of all laryngeal cases was very much the same as that of hospitals where tracheotomy was in vogue. A great improvement, however, in his results followed the systematic introduction of nasal feeding as a routine in all cases of intubation. Previously rectal feeding, or this along with soft foods by the mouth, was depended on. At present Dr. Ker depended entirely on nasal feeding. About the same time, also, he commenced to use vulcanite instead of the old metal tubes and he found that they were much better tolerated and that their use contributed to the improvement in his results. In hospital practice he was convinced that it was to the advantage of the patient to postpone operation as long as possible. Most of the cases were operated upon in the third stage of croup or when the patient was becoming exhausted and the pulse was beginning to fail. Unless during the second stage the paroxysms were very severe indeed it was better to avoid interference as so many of them recovered without operation. The great considerations were to give the serum time to take effect and to be always within reach of the patient and prepared to interfere at a moment's notice. It was obvious that in private practice early operation was desirable. Of the 70 cases intubated in the hospital since the autumn of 1904, 12 were purely laryngeal, in 48 the fauces were also involved, and in the remaining ten the naso-pharynx was also implicated. 19 patients died, or 27·1 per cent. Slightly more than one quarter of the total cases required a secondary tracheotomy, 18 in all being thus treated. As might be expected, the mortality after tracheotomy was high, only severe cases being thus treated. Of the 18, no less than ten succumbed, or over 55 per cent. In 11 of the cases tracheotomy was performed almost at once, as intubation had not afforded sufficient relief, and six of them died, the obstruction having been beyond reach. In only eight cases was tracheotomy successful after intubation had failed, and Dr. Ker thought that tracheotomy was limited in its use to about one-tenth of the total cases which required interference. Of the nine deaths of patients who were not subjected to tracheotomy, three occurred after the tube had been finally removed—two from heart failure and one from broncho-pneumonia. Five cases died with the tube in the larynx but all with laryngeal difficulty relieved; two of these succumbed to heart failure, one from pneumonia, and one from septic infection. Only one patient died during intubation from heart failure. Some surgeons remove the tube after 24 hours, while others leave it in for six days. In Dr. Ker's opinion the right time varied from 48 to 72 hours. In 12 cases intubation was required twice, in three thrice, in one four times, in one six times, in one seven times, and in one 14 times before the tube could be dispensed with. If the patient could do four hours without the tube it was seldom that it required replacement. If the temperature was normal and the respirations did not exceed 30 per minute before extubation, it was hardly likely that retubation would be required. The actual length of time that the tube was worn varied from a moment in four cases, where it was immediately coughed out along with membranes and so complete relief was afforded; seven patients wore the tube for less than two days; 17 were extubated in from 48 to 60 hours; five after three days; five after four days; three after five days; in three it was worn until the seventh to the tenth day; one case 14 days; and another 29 days. The cause of obstruction appeared to be occasionally atrophy of the laryngeal abductors from disuse and consequent adductor spasm. More frequently it depended on a subglottic hypertrophic laryngitis. The operation of intubation required considerable practice and was probably more difficult than tracheotomy. The patient should be in the recumbent position during intubation and the string should be attached to the cheek by a plaster strip, so that in the case of blocking the tube could be immediately removed. The presence of the string necessitated the control of the patient's arms by light splints. The use of steam in moderation was advantageous during the first few days while the tube was worn and while there was a risk of its being clogged with mucus, but when it had been worn for a few days Dr. Ker often put the patients in the open air to improve their general condition. The great difficulty of advising intubation as an operation for private practice was the experience which it required. Few practitioners had a sufficient number of cases of croup to acquire the requisite dexterity. Interference should be employed early as soon as laryngeal symptoms became marked; thus tracheotomy was often performed, and rightly, in cases which a hospital staff would not think of interfering with. Intubation was a much less dangerous procedure in such cases, and in slight cases it allowed time for the antitoxin to act, and the tube could often be removed on the next day. In country practice Dr. Ker would be inclined to intubate every case of laryngeal diphtheria as soon as it had been diagnosed, provided the obstruction were not very marked, in which case he thought that tracheotomy would be the safer method.—Dr. JAMES RITCHIE, Dr. JOHN MACMILLAN, Mr. C. W. CATHCART, and Mr. DAVID WALLACE took part in the discussion, and Dr. KER replied.

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PATHOLOGICAL SOCIETY OF MANCHESTER.—A meeting of this society was held on April 10th, Dr. A. Hill Griffith, the President, being in the chair.—Dr. J. Dreschfeld showed some specimens of Hypertrophic Cirrhosis of the Liver.—Dr. W. Milligan and Dr. D. L. Sewell made a short communication upon the Various Routes of Pathogenic Invasion in Cases of Intracranial Sepsis Secondary to Suppurative Middle-ear Disease. Special reference was made to the various sites of osseous erosion in the middle ear, such as the tegmen tympani and tegmen antri. The various intracranial lesions more usually met with were detailed and the

practical importance of following up the route of infection was insisted upon. Reference was also made to erosions upon the outer labyrinthine wall and to the grave prognosis when once the labyrinth becomes the site of purulent disease. Vascular and fibrous routes were also dealt with and the rôle played by the petro-squamosal sinus in the production of septic disease at the base of the brain was emphasized. The spread of purulent processes along the perineural sheaths of the auditory and facial nerves was described and illustrative specimens were shown and cases related.—Dr. J. Lorrain Smith gave a demonstration of specimens illustrative of the Pathology of Inflammation and Ulceration of the Intestine. The specimens included: 1. An example of ulcerative colitis. 2. A case of poisoning by corrosive sublimate. In this case the patient had swallowed three tabloids, each containing five grains of corrosive sublimate. The lesions consisted of a local area of inflammation near the cardiac end of the stomach in which a nodular swelling was found with a necrotic surface. The small intestine of this case was less affected than the large intestine. The cæcum and colon showed intense hyperæmia but no ulceration. 3. A number of specimens illustrating the various forms of intestinal inflammation met with in Bright's disease. Reference was made to the experimental work on the elimination of mercurial poisons and the occurrence of inflammation of the mucous membrane of the intestine in cases where the mercurial salt had been administered by an application on the skin surface. These results were compared with the observations on the increase of ammonia in the intestinal contents in cases of uræmia. It was also pointed out that a simultaneous disturbance of the bacterial regulation of the intestine might form an important element in the causation of the inflammatory conditions.—Other specimens were shown as card specimens.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on May 3rd, Dr. Leonard P. Mark, the President, being in the chair.—A paper was read by Mr. R. Lake on Some Results of Nasal Obstruction. He referred particularly to conditions connected with the special regions of the naso-pharynx, the pharynx, larynx, and ear, and also with the general system, the chest, the general development, and intelligence. He also insisted on the differences existing between the results of structural obstruction of the nose commencing in early life and that arising in later or adult life.—The paper was discussed by the President, Mr. G. A. Garry Simpson, Dr. J. B. Ball, and others.—Mr. George Pernet then read an exhaustive and valuable account of Hæmorrhagic Rashes, dealing with the pathology of these manifestations, the conditions under which they occurred, the differentia in their diagnosis, and with the methods of treatment to be employed. The paper contained many important references to the literature of the subject.—A discussion followed, in which the President, Dr. Phineas S. Abraham, Dr. A. J. Rice Oxley, Dr. Rickard W. Lloyd, and others participated.

# Reviews and Notices of Books.

*A Text-book of Ophthalmic Operations.* By HAROLD GRIMSDALE, M.B. Cantab., F.R.C.S. Eng., Ophthalmic Surgeon and Lecturer on Ophthalmic Surgery to St. George's Hospital, Surgeon to the Royal Westminster Ophthalmic Hospital; and ELMORE BREWERTON, F.R.C.S. Eng., Ophthalmic Surgeon to the Metropolitan Hospital, Surgeon to the Royal Westminster Ophthalmic Hospital. London: Kegan Paul, Trench, Trübner, and Co., Limited. 1907. Pp. 349. Price 12*s.* net.

THE technique of the individual surgeon is chiefly determined by the instruction which he has received from the masters of the art under whom he has worked. Methods and theories, often dogmatic in form, are handed down in apostolic succession. Only with increasing experience, quickened by such imagination and originality as have been vouchsafed to him, does he extend his somewhat narrow horizon, experimenting with the methods of other schools and devising new modifications on his own initiative. True as this fact is of general surgery, it is even more uniformly true of ophthalmic surgery. So specialised is the subject that the medical student learns little more than the general principles of ophthalmic operations in his pre-graduate days, and such knowledge as he acquires is derived chiefly from elementary text-books. The early period of his career at a special hospital is devoted to out-patient work, and he has few opportunities of learning the details of the technique of major operations upon the eye. It is true that he sees the cases before and after operation and it is possible that he may see the major operations performed, but the field of operation in the case of the eye is so small that he derives little advantage unless he is actually assisting the surgeon.

The student of ophthalmic surgery therefore, more than the student of any other branch of surgery, needs detailed instruction in the minutiæ of the various operations. This is obtained verbally from the teacher and is supplemented in the best schools by practical work upon the dead subject or upon dead pigs' eyes. In such a course both teacher and taught will derive much assistance from a good text-book. Hitherto no good text-book of ophthalmic operative surgery has been available. Beyond the restricted scope of the elementary manual of diseases of the eye the student has had to seek information in scattered treatises and original papers, often difficult to find. Until recently such a work was not attainable even in French or German, though the gap has now been filled by Terrien's "Chirurgie de l'Œil" and by Czermak's monumental treatise. Mr. Grimsdale and Mr. Brewerton have now stepped into the breach for the benefit of English-speaking students.

The scheme which the authors have adopted has been that of describing the principal operations employed for various purposes by different surgeons, so that, as a rule, several alternative operations are given for the same pathological condition. The method has obvious drawbacks, but it has resulted in the production of an extremely useful book. The arrangement of subjects is in accordance with the usual practical course and with the opportunities likely to fall to the lot of the young ophthalmic surgeon in his hospital work. Operations upon the extrinsic muscles and lids are followed by enucleation and its substitutes and operations upon the lacrymal apparatus. Finally, intraocular operations are described—for cataract, after-cataract, and glaucoma—followed by rarer operative procedures upon the cornea, sclerotic, and iris. All the classical operations receive ample attention and many debateable procedures are fully described.

In general we are in thorough agreement with the teaching conveyed but every ophthalmic surgeon of experience has his own ideas and partialities in the performance of individual steps and it would be impossible to please everyone on these minute details. If any criticism is to be offered we think that the authors do not lay sufficient stress upon their own rules of conduct, thus perhaps increasing the value of the book for the accomplished ophthalmologist, while detracting from its value to the beginner, for whom presumably it is written. We can conceive of a work on operative ophthalmic surgery, written by a master of the art from his own individual standpoint and describing in detail the procedures which he himself would adopt in given circumstances. Such a treatise would be invaluable to the beginner—of more practical utility than the work under consideration.

The book is well printed. There are numerous diagrams which are adequate to the purpose but are unnecessarily crude.

*Studies in Blood Pressure: Physiological and Clinical.* By GEORGE OLIVER, M.D. Lond., F.R.C.P. Lond. London: H. K. Lewis. 1906. Pp. 151. Price 2*s.* 6*d.*

IN this little book Dr. George Oliver describes a new from of hæmomanometer which differs in several respects form the instrument previously employed by him. Dr. Oliver's interest in the subject of hæmomanometry is well-known and in his Croonian lectures delivered before

the Royal College of Physicians of London in June, 1896,[1] he gave a full account of the construction and working of various instruments which he had devised for recording variations in the calibre of the radial artery and estimating the colour intensity of the blood. The new hæmomanometer is used in conjunction with armlets or air-bags encircling the part in which the blood pressure is to be determined. Two air-bags are provided, one measuring 12 by 35 centimetres for the arm and forearm, and one measuring 2·5 by 9 centimetres for the phalanges. Air is forced into them by means of a hollow ball provided with valves and squeezed in the hand. The manometer shows pressures up to 300 millimetres of mercury. It is a graduated glass tube connected to the air-bags by stout indiarubber tubing, and in it the air pressure is rendered visible by the compression of a column of air contained between the closed end of the tube and a liquid index. Two other forms of the manometer are also described at pp. 65–67.

Dr. Oliver has not found any appreciable difference between the arterial pressure (systolic and diastolic) taken from the upper arm and that taken from the forearm. In the upper limb the first appreciable fall in the pressure is found at the first phalanx, where the pressure is generally from 5 to 15 millimetres of mercury lower than in the arm. In the ungual part of the finger the fall increases so much that the pressure there is only one-half of what it is in the brachio-radial region, where a diastolic pressure between 95 and 100 and a systolic pressure between 105 and 130 millimetres of mercury are the figures commonly met with. There are, however, some apparently normal persons in whom the readings are habitually higher. A persistent systolic pressure of over 145 or 155 millimetres of mercury recorded within an hour before a meal should be looked upon as somewhat suspicious, and in subjects over 50 or 55 years of age should if possible be reduced by treatment, as it may increase slowly and result in cerebral hæmorrhage or secondary cardiac disease. High readings—e.g., from 160 to 180 millimetres diastolic and 250 systolic—should be accepted at first with some hesitancy, especially when the pulse-rate is raised; and the observer should always remember that when the peripheral resistance is increased the influence of nervous excitement, however slight, becomes much more pronounced than when the distal outflow is normal or subnormal. When the pressure readings are high the observer should look for corroboration in the accentuation of the second aortic sound and in the condition of the ventricle (evidences of hypertrophy, and so on).

The relations of blood pressure to vascular sclerosis have for a long time been a favourite subject of study and hæmomanometry has afforded an explanation of the occurrence of apoplectic seizures and hemiplegias unaccompanied by any apparent thickening of such vessels as the temporal or radial arteries. Generalised sclerosis of the arterioles and of the small arteries cannot be directly recognised during life, but its existence may with a fair degree of certainty be inferred from blood-pressure measurement. Dr. Oliver devotes many pages to the diagnosis and relief of this condition, with shorter references to chronic rheumatic and gouty ailments, chronic interstitial nephritis, various heart diseases, melancholia and mania, insomnia, neurasthenia, cerebral hæmorrhage, and acute febrile diseases.

Practitioners seeking information on this important branch of clinical diagnosis will do well to consult Dr. Oliver's work. Notwithstanding the remark that he has purposely refrained from entering on many by-paths of his subject which presented themselves, we think that some reference should have been made to the effect produced on the blood pressure by the inhalation of chloroform or ether, and by shock or fainting. As a remedy for a sudden and dangerous fall in the blood pressure Dr. George W. Crile, who is mentioned at p. 118 of the book, suggested about five years ago that the patient's body should be inclosed in a kind of indiarubber "combination garment" into which air could be forced.

[1] THE LANCET, June 6th, 13th, 20th, and 27th, 1896.

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*Injuries of the Eyes of the Employed and the Workmen's Compensation Act: Problems in Prognosis.* By W. M. BEAUMONT, Surgeon to the Bath Eye Infirmary. London: H. K. Lewis. 1907. Pp. 160. Price 5*s*.

WITH the exception of two chapters this book deals entirely with the prognosis in cases of various forms of injury to the eyes and their immediate surroundings. The author in the preface refers the reader to the text-books for questions relative to symptomatology and treatment. It must be admitted that he will also find there most of the material which is comprised in the book. Special attention is, however, devoted to the one aspect of the subject and a convenient and pleasantly written account is provided. The teaching is sound and trustworthy, though somewhat general; more concrete examples from the author's practice would have been welcome.

The first chapter deals with the principal Acts of Parliament referring to the rights of the employed and the giving of evidence. We think the book would have had more practical utility if this portion had been expanded, at the expense if necessary of some of the platitudes which find mention. The remark that a given one-eyed person "is quite unable to learn to estimate the degree of accommodation he is exercising" implies an ability which no one possesses. Such persons acquire the faculty of judging distance by experience of parallax and minute attention to shadows, and so on. The last chapter deals with malingering. The principal tests for malingering of binocular amaurosis and amblyopia and of uniocular blindness are given briefly.

The subject presented somewhat cursorily in this book is one of great importance and difficulty. The legal luminary is *a priori* antipathetic to the medical witness. Trained in the niceties of deduction from accurate data he is at a loss amongst the protean possibilities of prognosis. Fighting on his own ground he starts with a handicap which he too often uses to unfair advantage. The advice that "if the medical man does not wish to appear in court he must decline the first suggestion that he should see the patient at all," is seldom applicable, since most such patients are seen in the ordinary routine of hospital work. The medical man can only be compelled to give evidence of fact on a subpœna, except at the express order of the judge. It is unlikely that the latter will demand an expert opinion without satisfactory guarantee that an equitable fee will be forthcoming. This is an aspect of the subject which should have received mention in the book under consideration.

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## LIBRARY TABLE.

*Elements of Physics for Medical Students.* By FREDERIC JAMES M. PAGE, B.Sc. Lond., F.I.C. London: Cassell and Co. 1907. Pp. 288. Price 5*s*.—This little book gives a brief outline of what the author quaintly calls "General Physics" and contains a large amount of information with respect to the special subjects of heat, electricity, sound, and light. A medical student who had really mastered all the principles and details here set forth or indicated could hardly fail to do well at any of his examinations where a knowledge of the four last-mentioned branches is required, but the subjects of statics and kinetics are altogether ignored, so that the student must look elsewhere for an account of the so-called mechanical powers, the action of gravity on bodies either falling freely or projected in various directions, the resolution of forces, simple

phenomena of rotation, and so on. This is no doubt to be explained by the remark made in the preface that the book has been written with an eye to the syllabus of the examinations of the English Conjoint Board and the Society of Apothecaries. Mr. Page has succeeded in including much matter within a narrow compass, but it must also be acknowledged that he generally appears to assume that his readers either have already some insight into the subjects or else are studying under the guidance of a teacher. For instance, the notice of the dyne and the erg on pp. 5 and 6 hardly makes it clear to a beginner that these units are so small and so ill-adapted for measuring ordinary mechanical effects that the effort of tearing a sheet of notepaper would be equivalent to thousands of ergs. In the explanation of the vernier on pp. 6 and 7, only those having nine divisions of the main scale subdivided into ten parts are mentioned, and there is no reference to the equally useful ones having 11 divisions of the main scale subdivided into ten parts. On pp. 11 and 253 directions are given for determining "the thickness of a plano-convex lens" with a spherometer. This, of course, can be done in that way if required, but the proper use of a spherometer is to measure the curvature of a lens rather than its thickness. Again, on p. 35 one of the causes of variations of atmospheric pressure is said to be "changes in temperature." Meteorologists will appreciate this, but a candidate for examination honours would probably not answer a question of that nature quite so concisely. On p. 51 the description of the experiment with a thread and a soap film appears to us as one that would be incomprehensible to anyone who has not seen the experiment or who has not read Professor Boys's admirable little book on "Soap Bubbles." For students who have made some progress in physics the book will be useful as a summary of leading points and the 230 illustrations which it contains are generally helpful.

*The Public Health Acts and Other Sanitary Laws and Regulations.* By MARTIN ELLIOTT, of the Middle Temple and Western Circuit, Barrister-at-Law, and GILBERT ELLIOTT, L.R.C.P., D.P.H. Lond. London: H. K. Lewis. 1906. Pp. 168. Price 5*s.* net.—This book is specially prepared for the use of those who are studying for a diploma in public health. The joint authors hope that by condensing and summarising sanitary law and the principal by-laws of the Local Government Board into one small volume they have supplied a need which has long been felt by many. The law on each topic is quoted verbatim from the statutes, "the merest tautology, being, in a few instances, avoided." Many cross references are given to facilitate the simultaneous perusal of the parts which should be studied together. Nearly 30 pages are devoted to the Public Health Act, 1875, for this is the parent Act from which most legislation has flowed, and therein are crystallised the main features of the law with which a medical officer of health is required to be familiar. The little book is ably edited and the possession of a copy will, we think, save time and trouble to those who are preparing for the public health diplomas.

*Rough Notes on Remedies.* By W. MURRAY, M.D. Durh., F.R.C.P. Lond. Fifth edition, enlarged. London: H. K. Lewis. 1906. Pp. 212. Price 4*s.* net.—This new edition of a very useful little book is welcome. It will undoubtedly be a great help to many of the younger members of the medical profession. Dr. Murray advocates greater reliance on the more common remedies; though he recognises that they must be used with great common sense and a due appreciation of their effect in each individual case. Arsenic, belladonna, calomel, and nitrate of silver has each its chapter; and Dr. Murray advocates doses of these drugs which will stagger the young practitioner. He deplores that the so-called "scientific medicine" of to-day, which is sadly wanting in the practical elements of everyday work, is ousting some of the old-fashioned and time-honoured remedies. "Our Mistakes" is the title of one chapter in this little book and therein Dr. Murray gives much advice that is good and may be followed with advantage. Another chapter on the Limitations of Treatment is full of sage counsel to the young, and maybe somewhat nervous, practitioner. The uses of alcohol in the treatment of disease are impartially considered in Chapter XI., and some useful hints to medical men when called upon to give evidence in a court of law form another chapter. Dr. Murray thinks that the south coast watering-places are over-rated and pins his faith to the north, with a preference for parts of Northumberland. The book ends with an appendix and a plan explaining the physical features and geological structure of a part of the valley of the Coquet, by R. A. S. Redmayne, F.G.S. This book is full of most useful information and we thoroughly recommend it to all practitioners of medicine. It is well written and easily read. The author claims nothing more for it than that it is the outcome of 30 years' experience of medical practice which has produced in him an increasing faith in medicines, and calls it "the rough and ready work of an old practitioner."

*Plaster-of-Paris and How to Use It.* By MARTIN W. WARE. New York: Surgery Publishing Co. 1906. Pp. 88. Price $1.—This is a useful little book giving an account of the way to prepare and to apply the various kinds of plaster splints, including a Sayre's jacket. There is also a chapter on the use of plaster in dental modelling. With the exception of the information on the use of plaster in dentistry there is nothing in the book which an ordinarily intelligent dresser ought not to know on the completion of his six months' dressership, but practitioners who have long left the hospital, and who are possibly only called upon to treat surgical affections requiring the use of plaster at considerable intervals, will find the instructions given useful as a means of refreshing their memories as to the necessary technique.

*The History of Edward Pellew (First Viscount Exmouth).* A Paper read on board H.M.S. *Exmouth*, by Fleet-Surgeon W. E. HOME. Plymouth: The Western Morning News Co.—We have read this pamphlet with interest and recommend anyone who cares for the history of our fleet and its past heroes to obtain it. It is hardly too much to say that if Nelson had not completed the annihilation of his country's enemies Lord Exmouth would have done so no less surely, for if he had not quite the Nelson touch he had in extraordinary measure the Nelson grit, as the victor of Trafalgar himself bore witness when he replied in answer to Pellew's request to serve under him that he was too good to be second in command to anyone and so gave him a squadron of his own. Pellew certainly had the advantage to serve in a time when a man by personal endeavour might carve out a career for himself in the navy in a manner that the conditions of modern warfare can scarcely again afford, but he deserved every tittle of his honours, not only for his victories but for his personal valour, which he showed no less in repeatedly saving lives from drowning (and once by swimming round his own ship to find a leak) than in his personal share in his victories. The bombardment of Algiers and the freeing of its slaves was a fitting crown to his achievements. Fleet-Surgeon Home has done full justice in this paper to a glorious life.

## JOURNALS AND MAGAZINES.

*The Phonographic Record.* April, 1907. London: Sir I. Pitman and Sons.—The April number of this stenographic journal contains an interesting article on Some Cases of Intestinal Cancer, by Mr. Norman Porritt. In the course of the article he states that the preconception that cancer is

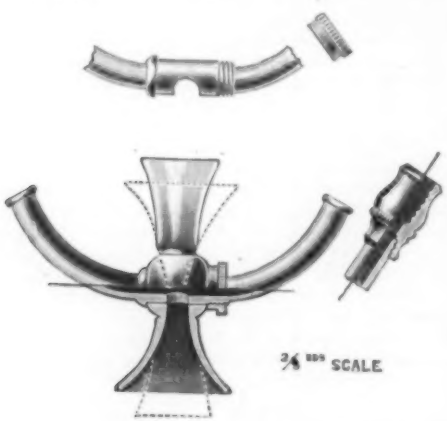
necessarily a disease of mature or declining years, like the belief in the omnipresence of the so-called cancerous cachexia, is one that cannot safely be held; also that the theory that a colotomy stays the progress of rectal carcinoma by diverting the intestinal contents, so that they no longer pass over and irritate the diseased area, is one that seems to him to require qualification. Dr. Edward Walker of Huddersfield relates an anomalous case of cancer of the stomach in a man, aged 39 years, a stone dresser, where the post-mortem examination revealed considerable cirrhosis of the liver and slight cirrhosis of the spleen and the stomach was apparently completely filled by a mass of encephaloid cancer in the centre of which was a small cavity filled with pus and broken-down cancerous tissue, although the man throughout his illness had no pain, no vomiting, no loss of appetite, and no symptoms of any kind pointing to the stomach as the organ at fault. Dr. A. Hill Joseph writes on Some Points in Urine Analysis and states that in his opinion in the estimation of sugar Gerrard's cupro-cyanide method is the best. The anecdote about "strong feeding for babies," told by a medical man at Ancoats, reveals a tragi-comedy. It is worth repeating. "I was called one day," he said, "to see a sick baby, and found the mother feeding it with little pieces of corned beef. 'My good woman,' I said, 'you must not feed the baby with that sort of stuff.' She replied, 'What am I to feed him with? he doesn't like pork!'"

# New Inventions.

## AN IMPROVED CHEST-PIECE FOR BINAURAL STETHOSCOPES.

FOR several months I have been using a newly devised form of chest-piece which I consider an improvement. As will be seen from the illustration, the body is made so that it revolves, the larger end being used for general chest examination, while the smaller is suitable for intercostal and supraclavicular purposes.

The instrument is in three parts—viz., the actual chest-piece, the curved arms to which the tubes are attached, and a metal screw cap which serves either to allow the whole to be taken apart for sterilisation or to make the chest-piece quite rigid. The revolving part is in one piece of metal or




ebony, and while in most binaural stethoscopes the ebony part has to be unscrewed for intercostal examination this new and simple device obviates that necessity.

Stethoscopes now in use need not be discarded, for although the illustration is intended for indiarubber tubes, either silk or mohair tubes can easily be fitted by means of the special mount depicted separately and which is screwed on to both ends of the arms. The article can be obtained from any dealer in surgeon's instruments.

DAVID ROSS, M.D. Aberd.

## KENT'S SANITARY ICE-SAFES AND REFRIGERATORS.

IT is somewhat surprising, considering to what purposes they are applied, how little attention has been bestowed upon the design and construction of ice-safes and refrigerators with the view, not only of making them effective for the preservation of food in a sound state, but of insuring during its storage a sanitary environment. A mere ice-box is not sufficient for the purpose. The insulation should not only be good but provision should also be made for the passage of clean chilled air through the refrigerator. When attention is carefully paid to the details involved by such requirements the results are highly satisfactory, food is preserved in a sound, wholesome state, and the psychical factor of digestion and appetite is not spoiled by the sight of unattractive looking viands. In the patented system of refrigerated ventilation carefully worked out by Mr. George Kent of 199, High Holborn, a continuous pure dry cold current of air passes through the food chamber, carrying off all exhalation and thus preventing the contents tainting one another with their individual odours. Onions, if need be, may thus be kept in company with delicate articles like fish, strawberries, cream, milk, and so forth, without imparting to these their characteristic odour. The refrigerators are lined with non-absorbent material, such as zinc or crystopal, and the internal fittings are removable for cleansing purposes. Crystopal is described as imperishable, damp-proof, and proof also against fluctuations of temperature and against stains. It is a stout, resistant material with a beautiful white glaze and gives a very attractive appearance to the interior of the cold chamber. The refrigerators are made with an inner and an outer case and between the two there is a thick layer of a special non-conducting material made of cork or hair felting submitted to great pressure. Altogether these refrigerators are constructed on sound scientific lines, in addition to which they are designed to comply with the conditions demanded by hygienic considerations.

# Looking Back.

FROM

## THE LANCET, *SATURDAY*, May 9th, 1829.

Mr. John Crichton communicates a case of "leaping ague of Angusshire," a disease which is, at least by that name, new to us. The subject of this singular affection was a young lady, with a bad stomach, who from this cause, from a fright by robbers, and the subsequent loss of a sister, became melancholy and dejected. The suppression of the catamenia, accompanied by coldness of the extremities, ensued; the paroxysm usually commenced, by her collecting her trinkets, and taking them into bed, where she amused herself with them for some time. She next rose, and what with running over tables, and mounting doors to swing backwards and forwards, she was with difficulty restrained from injuring herself; she then became exhausted, and fell into a deep sleep. Her conversation and writing, which she sometimes adopted to make herself understood, were distinguished by the peculiarity of pronouncing the last letter of a word first, and by commencing her manuscript which she wrote from right to left, by the last word of the sentence intended to be written. Opium was tried to check these paroxysms, but produced stupor; and a shower bath, which was tried once, produced a lock-jaw for some days. The disease, however, never returned with the same violence after its use, and, by a proper attention to the state of the stomach, and a voyage to the Baltic, she became convalescent, and is now entirely restored to health.*

Edinburgh Medical and Surgical Journal.—April, 1829.

THE LANCET.

*LONDON: SATURDAY, MAY 11, 1907.*

## The Oliver-Sharpey Lectures.

"WHILST knowledge is in the making there must be divergencies of opinion and it is only by a full and free discussion of these and by the renewed research of which criticism is the stimulus that any certainty in the way of truth can be arrived at." With these strikingly apposite remarks Professor W. D. HALLIBURTON introduced the subject matter of his Oliver-Sharpey lectures on New Facts in Relation to the Processes of Nervous Degeneration and Regeneration, delivered before the Royal College of Physicians of London on April 29th and 30th, and published in THE LANCET of May 4th (p. 1207) and 11th (p. 1273). About many of the details of both of these processes there has been, and still is, much controversy, and the new facts brought forward by Professor HALLIBURTON and his coworkers are, in the main, the outcome of critical experiments specifically devised to put to the test matters in dispute and to establish where the truth lies amid conflicting observations and opinions.

His first lecture was almost exclusively devoted to the chemical aspects of nerve degeneration. After referring to the pioneer work of THUDICHUM in regard to the chemistry of healthy nerve tissues and to the difficulties in the way of research in this field owing to the many gaps in our knowledge, he proceeded to emphasise the importance of the phosphorised fatty constituents, taking lecithin as a type and one convenient for study, since both its composition and the products of its decomposition are known. Lecithin on hydrolysis yields fatty acids, including oleic acid (to which the well-known osmic acid reaction is due), glycerophosphoric acid, and choline, a nitrogenous base. These decomposition products are of interest in regard to degeneration, since the Marchi reaction, now so generally utilised in demonstrating degenerated nerve fibres, depends upon the fact that the oleic acid resulting from the decomposition of the lecithin is capable of giving the black colouration with osmic acid even in the presence of chromic salts, while lecithin itself does not. Again, Professor HALLIBURTON and Dr. F. W. MOTT have shown in a previous research that in degenerative diseases of the nervous system and in degeneration artificially produced in animals by the cutting of nerves, the products of degeneration, notably choline, can be detected in the circulating fluids, and they suggested that the discovery of choline in the blood and cerebro-spinal fluid affords a definite proof of the breaking down of nervous tissue and further that it might be of service in distinguishing between organic and functional disorders. Their conclusions have been confirmed by other observers, but the methods which they proposed for the detection of choline have been criticised. These tests were two in number: first, a chemical test—viz., the preparation of crystals of the double chloride of choline and platinum; and secondly, a physiological test, which consisted in observing the effect of injection into the blood stream, this being a temporary fall of arterial blood pressure which, if the animal has been previously poisoned with atropine, does not occur or is replaced by a rise. It is, however, the chemical test which has been chiefly criticised. It was pointed out by ALLEN and FRENCH that in the preparation of the crystals potassium salts were not entirely eliminated and that these formed a double chloride of platinum and potassium of similar crystalline form to that of choline platino-chloride. These observers, using an iodine test for choline which is not subject to this source of error, confirmed the occurrence of that substance in the blood of patients suffering from acute degeneration of nervous structures. Dr. OTTO ROSENHEIM, working in Professor HALLIBURTON'S laboratory, has re-investigated the matter and elaborated three tests for choline, one of which Professor HALLIBURTON regards as simple, easily applied, and absolutely decisive. The method of applying it is to add a strong solution of iodine in potassium iodide to a preparation of the crystals of choline platino-chloride, which then disappear and are replaced by dark brown plates and prisms not unlike hæmin crystals. They consist of a periodide of choline and are very unstable, being rapidly converted into brown oily droplets if the slide is allowed to stand so that the liquid evaporates, while if more iodine solution is added they once more form and again disappear. DONATH in Germany has brought forward another means of distinguishing the crystals of choline platino-chloride from those of the potassium salt by showing that the former are doubly refractive while the latter are not. Further research by Dr. ROSENHEIM has brought to light the occurrence of other organic substances in the blood and cerebro-spinal fluid in cases of breaking down of nervous tissues and has also shown that to obtain the iodine test for choline it is not necessary to prepare the platino-chloride, since it can be applied directly to the alcoholic extract of the cerebro-spinal fluid. In regard to the physiological test for choline further investigation has demonstrated that other substances exist in extracts of nervous tissues which exert a depressing action on blood pressure, but that this action is not abolished by atropinisation. An interesting fact observed by Dr. REID HUNT in America is that an artificial derivative of choline—viz., acetyl-choline—is much more active, being capable of overcoming the effect of adrenalin.

The second lecture is devoted to a histological and experimental examination of certain aspects of the regeneration of nerves. It is a remarkable fact that whereas the original account of the histological changes in degeneration of nerves given by the elder WALLER more than 50 years ago has never been assailed, and, indeed, has been but little, if at all, added to, on the other hand, his descriptions of the processes of nerve regeneration have been repeatedly disputed. It is, moreover, a great tribute to the accuracy of his observation that in spite of this his view that the axis cylinder is a branch of a nerve cell, and that in regeneration the restoration of the axis cylinder takes place from the central end of the divided nerve, is now the view held by the

majority of observers. The opposing view, that "autogenetic regeneration," or regeneration in the distal end without central outgrowths, occurs was originally brought forward by VULPIAN and PHILLIPEAUX. Many years later VULPIAN, on repeating his experiments, found that his results were to be explained by means of fibres growing into the peripheral stump from other nerves in the neighbourhood, and he therefore recanted his former opinions and adopted the Wallerian explanation. Recently PURVES STEWART and BALLANCE in this country, and BETHE in Germany, have revived the autogenetic theory, the former as the result of histological observations, and the latter on histological and experimental grounds. These views have been strenuously controverted by LANGLEY and ANDERSON, by LUGARO, by RAMON Y CAJAL, by MARINESCO, and by Professor HALLIBURTON, Dr. F. W. MOTT, and Mr. A. EDMUNDS, while in a recent paper even BETHE himself admits that in adult animals no regeneration of medullated fibres occurs autogenetically. Professor HALLIBURTON and his co-workers have arrived at conclusions similar to those reached 15 years ago by HOWELL and HUBER and in consonance with the original views of WALLER—viz., that "although the peripheral structures are active in preparing the scaffolding the axis cylinder which is the essential portion of a nerve fibre has an exclusively central origin." The experiments described by Professor HALLIBURTON, which comprise both histological and experimental methods, were ingeniously conceived and admirably adapted to set at rest the matters in dispute. They find that the neurilemmal cells show changes both in regard to degeneration and regeneration; at an early stage of the former process their nuclei multiply; later together with phagocytes they take part in the removal of the myelin droplets; subsequently they become, in association with regeneration, elongated and connected end to end, an appearance which has given rise to the supposition that they form the new nerve fibres. To test this a long stretch of sciatic nerve was removed and every precaution was taken to prevent union of the peripheral end with central fibres; it was then found that chains of neurilemmal cells, without any indication of either axis cylinder or medullary sheath, were all that could be observed in the peripheral stump, which was, moreover, inexcitable to strong faradic stimulation. The next group of experiments was carried out upon transplanted nerves and when precautions were taken to prevent the ingrowth into them of fibres from the central ends of nerves cut through in the operation similar results were obtained. At the suggestion of Professor F. GOTCH experiments were made on the degeneration of regenerated nerves which were found to degenerate towards the periphery after a second section below the site of the original lesion, a result much more in agreement with the view that regeneration occurs from the centre towards the periphery than with the autogenetic theory. This view was likewise supported by observations on the process of medullation of regenerating nerves, which is found to be more advanced near the place where the nerve was originally cut than at more distal situations—a very significant piece of evidence. The result as a whole has been to establish the Wallerian view of the process of regeneration and to clear up some obscure points in regard to this important practical question. Professor HALLIBURTON'S two lectures constitute a valuable addition to the science of applied physiology and are worthy of careful study not only by physiologists but also by those engaged in the actual practice of medicine and surgery.

## Experimental Anæsthesia.

THE problem of anæsthesia is one of the most interesting that can engage the attention of physiologists or clinicians and we are glad to indicate briefly to our readers some of the points recently investigated by Dr. G. A. BUCKMASTER and Mr. J. A. GARDNER and described by them in several papers read before the Royal Society. We mean by "the problem of anæsthesia" the question of what exactly happens to an anæsthetic vapour after it reaches the lungs, in what form it exists in the blood, how it is held there, how given up to the tissue cells, and in what way it exerts upon them its peculiar and possibly selective action. These questions are difficult factors in the problem, but they hold in their answers our power to perfect in the future the practical art of administration of anæsthetics until danger is even further banished than at present, and until the subsequent discomforts to the subjects which are now the more general reproach of anæsthesia cease altogether. Numerous observations and experiments have been made, both in this country and abroad, with the view of determining the proportion of the inhaled chloroform which is retained by the patient, the amount of chloroform present in the blood of an animal fully anæsthetised and of one killed by chloroform, and the manner in which chloroform is associated with shed blood when this is exposed to chloroform vapour outside the body It is with regard to the last matter especially that the experiments of Dr. BUCKMASTER and Mr. GARDNER are valuable, as their work was directed particularly towards throwing light upon the rate of assumption of chloroform by circulating blood, the actual vehicle in blood which is concerned in the transport of this drug, and the relative danger of the various degrees of anæsthesia.

In the first place the observers made a number of experiments to determine the anæsthetic and the lethal quantities of chloroform in the blood of animals; and in the second place, they attempted to ascertain how chloroform is distributed between the corpuscles and the plasma of the blood. The latter experiments go over ground that is new or has only recently been trodden. The conclusion arrived at as to the distribution of chloroform in the blood is, broadly speaking, that the main bulk of the drug is held by the red corpuscles and very little indeed by the plasma. In the case of cats this is so unless narcosis is of an extreme degree or very rapidly induced. In connexion with this fact—for a fact we may now reasonably take it to be—we may remark upon the statement of the authors that the oxygen-carrying power of the hæmoglobin is in no way interfered with, an opinion which is opposed to that previously expressed by other observers. But it is interesting to notice that Dr. BUCKMASTER and Mr. GARDNER found no evidence of the decomposition of chloroform within the blood. This is contrary to the finding of DESGREZ and NICLOUX who held that as much as 6·9 cubic

centimetres of carbon monoxide, the result of chloroform decomposition, may appear in 1000 grammes of blood during profound chloroform narcosis. Certainly, the experiments of the more recent observers seem to prove that none of the hæmoglobin of a chloroformed animal is in the state of CO-hæmoglobin. Yet the colour of the blood itself is a good guide to the degree of anæsthesia in a chloroformed animal. It appears that in the case of dogs chloroform enters the plasma rather more readily than is the case with cats. The latter were chosen for the present investigation because their behaviour towards anæsthetics is more comparable with that of the human subject. Whatever be the exact character of the association between the chloroform in an anæsthetised animal and the corpuscles of the animal's blood one fact about it is certain—namely, the firmness of the association. There is no smell of chloroform to be detected in samples of such blood, and if samples are allowed to stand for a night they suffer no diminution in chlorine, showing presumably no diminution in the chloroform which the blood holds. Another feature of the relation of chloroform to the blood of an animal which is killed by the anæsthetic is its bearing upon medico-legal inquiries. This is the great diminution of chloroform in the blood that is observed shortly before death. The explanation preferred for this phenomenon is that an abnormal quantity is at this time to be found in the tissues themselves, particularly the tissues of the nervous system. In animals which are anæsthetised but not killed by chloroform the amount of the drug which enters the central nervous system may equal, but never exceeds, and is generally much less than, the amount in the blood.

From the clinical point of view we may notice in these physiological observations one or two points which are in harmony with our preconceived notions. There are necessarily differences between the conditions which obtain in the physiological laboratory and the operating theatre, and a recognition of this fact explains apparent discrepancies between physiological experiments and clinical observation. In the one case almost absolute control can be obtained over the environing circumstances of the administration of the anæsthetic; in the other this is impossible—at least, in many cases. That the conclusions arrived at by experiment are wholly true when applied to clinical ends there can be no doubt, and they further lead the clinician to modify his methods in such ways as will enable him to produce results parallel with those obtained in the laboratory. It is from this point of view that the work of such investigators as Dr. BUCKMASTER and Mr. GARDNER stands out as of conspicuous value to the practitioner of medicine. To take an example. In the ordinary methods of inhalation as conducted in the clinical theatre there is a much greater chance of mechanical obstruction to breathing than when the chloroform is aspirated directly through a tracheal tube, as in the case of the physiological experiment. Again, the so-called "idiosyncrasy" which has been assumed to exist in certain persons with regard to anæsthetics becomes intelligible if the physiologist's conclusion is correct that there is no absolute relation between the proportion of chloroform in the blood and the effects of the drug upon the entire organism, for these are determined not by the amount of chloroform present in the circulation but by the quantity which enters the tissues of the central nervous system. Obviously, therefore, to any two individuals A and B the same amount of the drug might be offered for inhalation, the same amount might be inhaled, the same amount might be present in the blood, and yet the central nervous system of A might have enough chloroform to produce anæsthesia, while that of B might be only affected to the degree of arousing some slight excitement. Another highly important conclusion which tallies with clinical experience is the statement that the amount of chloroform in the blood which produces anæsthesia varies with the rate of induction of anæsthesia. This is to say, that roughly speaking the more gradually the patient is anæsthetised with chloroform the less of the drug will he have to inhale from first to last. This fact is one of the chief arguments in support of those chloroform-regulating forms of apparatus by which it is possible to give extremely low percentages of chloroform vapour and to control the percentage inhaled throughout the whole course of the narcosis. Yet it is important that the administrator should bear in mind the conclusions which show with what minute quantities of chloroform anæsthesia may be maintained, and for this reason we have drawn attention to the point. The methods described in these researches for the estimation of chloroform in the blood are novel and practically free from error. They would appear to be capable of giving more trustworthy results than those employed previously by SCHMIEDEBERG and POHL and to supply figures more accurate than those recently obtained by French observers. Dr. BUCKMASTER and Mr. GARDNER refer to experiments to be described in the future bearing upon the production of anæsthesia under varying conditions, and we hope to revert later to their valuable and suggestive investigations.

## Medical Men and Workmen's Compensation.

SOME six months ago Mr. ALBERT BENTHALL, who has given much attention to the medical questions connected with the various forms of insurance, called attention in our columns to the pronounced manner in which the Workmen's Compensation Act, 1906, would affect medical practitioners. As all our readers know, the Act at present in force, a piece of legislation dating from but nine years ago, contains a number of conditions which have proved fruitful sources of litigation. The "workman" to be assisted by the moribund Act is limited by definition and the circumstances in which he can claim compensation are detailed and particular, but by the Act which will come into force on July 1st next all these conditions and limitations will be swept away. Under Clause 13 of this Act the "workman" is defined in the following words:—

"'Workman' does not include any person employed otherwise than by way of manual labour whose remuneration exceeds £250 a year, or a person whose employment is of a casual nature and who is employed otherwise than for the purposes of the employer's trade or business, or a member of a police force, or an outworker, or a member of the employer's family dwelling in his house, but, save as aforesaid, means any person who has entered into or works under a contract of service or apprenticeship with an employer, whether by way of manual labour, clerical work, or otherwise, and whether the contract is expressed or implied, is oral or in writing."

From this definition of "workman" it will be seen that medical men are especially concerned in the working of the new Act, for many medical practitioners necessarily employ in addition to general domestic servants an assistant or dispenser, a locum-tenent, a coachman or chauffeur or both, and may also have to employ a surgery boy and other dependents whose occupation may or may not come under the head of casual work. In the event of a fatal accident happening to any of these "workmen" in the course of their duties the employers will be liable, if the employees have any dependents, to pay to these dependents perhaps as much as £300 in compensation, the legal liability being for a sum equal to three years' wages, or £150, whichever of these sums is larger, providing that the payment does not exceed £300. But the death of an employee is not so much to be feared as his or her disablement from accident, for here a weekly payment during the continuance of the disablement will have to be paid, which might conceivably mean an annuity by the side of which any lump sum payable in case of death might be a comparatively small amount. From these circumstances, all of which have been brought prominently before our readers in our editorial columns during the past six months, it will be seen that a very large number of medical men will have to insure against their new risks unless they are willing to take the chance of being heavily mulcted by fortune.

As an outcome of this feeling a Medical Insurance Committee was formed early this year to consider whether it would not be possible to devise a scheme for combination in insurance whereby medical men, who must in the future become the payers of increased annual sums in premiums, could benefit from some coöperative scheme ensuring to them a substantial rebate. The Medical Insurance Committee as originally constituted consisted of representatives of the *British Medical Journal*, THE LANCET, Dr. H. RADCLIFFE CROCKER (who accepted the invitation to become chairman), Dr. J. A. MACDONALD, Mr. GEORGE EASTES, Mr. ALBERT BENTHALL, Dr. T. H. ARNOLD CHAPLIN, Mr. J. SMITH WHITAKER, and Mr. GUY ELLISTON, secretary of the British Medical Association, and after considerable deliberation, in which the exact position of the Association towards the scheme was arrived at, it was settled that the committee should arrange to conduct an agency for insurance against accident and other risks on behalf of medical men, the usual agency commission being used for defraying clerical labour and for benevolent purposes for the benefit of the insurers. The committee sat frequently and received particulars of agency commission and rates of premium from a number of insurance companies and is now in the position to recommend the proposals made to it by the Guardian Assurance Company, Limited, against risks arising under the Workmen's Compensation Acts, as well as in respect to fire, burglary, and accident to the insurer. An advertisement giving full particulars with regard to the arrangements of the Medical Insurance Committee with the Guardian Insurance Company, as well as the rates of premium and form of proposal to be addressed to the committee, will be found on page 19 of our advertisements this week. On the lower part of the form being detached and forwarded to the Medical Insurance Committee, care of the British Medical Association, 6, Catherine-street, Strand, London, it will receive prompt attention, while any further information that may be required will be supplied by the committee. Our advice is that, in cases where there seems doubt whether an employee comes within the scope of the Act, the small premium to cover insurance should be paid willingly, at any rate until legal proceedings under the Act have led to certainty as to the interpretation of its provisions. It will be open to any employee who can find a solicitor to assist him to bring an action against his employer for compensation under the Act. Although the employer may win the case he will have to meet his legal expenses unless he is insured. Insurance carries such expenses.

The scheme is simple in its nature and should be comprehensible, we think, without any trouble. The Medical Insurance Committee has established an agency for insurance against risks arising under the new Workmen's Compensation Act, the scheme also taking cognisance of all risks of the employer for compensation to his employees at common law, as well as the risks of fire, burglary, and accident to the insurer. The agency will allow a discount of 10 per cent. to the insurer upon his premiums save in the case of fire, and here the rebate is not offered by the Guardian Insurance Company; but we understand that the principal insurance offices are unanimous in deciding that no discount for premiums can be allowed to an insurer in respect of fire, a solidity of opinion that is probably dictated by the relations of the various offices to their regular agents. In proportion to the extent to which this scheme meets with the general support of the medical profession there will be left, after allowing the discount and paying expenses, a large or a small annual sum in the hands of the Medical Insurance Committee to be disposed of for the benefit of the insured. The scheme provides that this sum shall be devoted to benevolent purposes, and it will presumably be expended for the benefit of any persons insuring through the Medical Insurance Committee who are incapacitated from work by age or disease or who are in poverty. Those widows or orphans of the insured whose pecuniary resources are particularly slender will probably receive the earliest attention of the committee.

# Annotations.

"Ne quid nimis."

## THE CONTROL OF MALARIA IN INDIA BY THE ITALIAN METHOD OF LAND IRRIGATION AND SILT-BUILDING.

AN interesting paper on the "Applicability to India of the Italian Method of Utilising Silt" was read before the Indian section of the Society of Arts on May 2nd by Sir Edward Buck, K.C.S.I., who has already made a report on the subject to the Governor-General of India in Council. Since the twelfth century the Italian agriculturists have been accustomed to carry on engineering works for the control of their natural water-supplies as well as for agricultural purposes, and these Professor Niccoli of Pisa (quoted by Sir Edward Buck) has summarised as follows: (1)

irrigation, or the supply of water to crops; (2) fertilisation of land by irrigation and (3) by submersion; (4) protection against frost by submersion; (5) *bonificazione* in the plains; and (6) *bonificazione* in the hills. Sir Edward Buck finds it impossible to translate *bonificazione* into one English word and thus expands its meaning, "The fertilisation and sanitation of low-lying unhealthy lands in the plains by deposit of silt combined with drainage; and in the hills the utilisation of silt and the prevention of erosion"; and his communication to the Society of Arts might have been called the Gospel of Silt with the text, "That wherever fertilising silt is available it is a grave economical error not to profit by it." Most instructive figures and details were given in support of this proposition, the average increase in the value of land on which mountain waters have been allowed to settle and deposit their silt being 20 per cent. at a low estimate. The value of a system of damming watersheds to obtain collections of alluvial deposit was fully recognised by the great engineer, architect, and painter Leonardo da Vinci, who in his treatise on the "Movement and Measurement of Waters" heads his fifty-third chapter, "How with the running waters we ought to carry the earth of the mountains into the valleys, so as to render them fertile, and to purify the air;" and that his counsels have been followed by his countrymen Sir Edward Buck testified in these words: "And for the last five centuries the intelligence of the Italian engineers has been directed to forcing each stream to turn the swamps which it had itself caused into fertile plains, and to build up with its own silt rich terraces in the very ravines which it had torn from the hillsides." It will be seen that Leonardo da Vinci's heading indicates something more than a merely financial advantage to be derived from these measures, and for centuries it has been recognised that silting and draining operations invariably coincided with improved health in the local communities; in fact, although until quite recently no adequate reason could be given, they were known certainly to abate the incidence of malaria in the districts where they were employed. Sir Edward Buck points out that the work of *bonificazione* is very much on all fours with the proceedings which modern medical discovery would recommend as necessary for the extermination of malaria by the destruction of the breeding-places of the mosquito; and in his opinion there is not only no reason why malaria should not be entirely stamped out of Italy, if the Government of that country continues to work on the present splendid scale for the agricultural benefit of the country, but there is reason to hope that similar methods adopted in India would succeed from both economical and hygienic standpoints. That they may succeed locally is already proved by the increased value of estates which have adopted methods allied to *bonificazione*, but the question of carrying them out throughout India at the Government expense is one that must needs be thoroughly considered by competent engineering, agricultural, and sanitary experts. In this connexion Sir Edward Buck pleads for the training of a number of "agricultural engineers" who could apply their whole energies to the practical solution of the problem in different localities and the preparation of special survey maps with the same object. Sir Edward Buck's report to the Governor-General of India in Council as to how far the methods of *bonificazione* might be adopted with advantage in India gives a very careful analysis of the scheme and the importance of such a movement can hardly be over-estimated if it be economically feasible. Not only would the abolition of malaria render the lives of both Europeans and natives in India—where "a touch of fever" is about as common as is "a cold" with us—infinitely more comfortable, but it would proportionately enhance the working value of that complex administrative machinery on which the welfare of the country depends. It is gratifying to hear from Sir Edward Buck that his report was in great part due to Lord Minto's personal interest in the matter.

## THE "VACCINATION ACT, 1907."

ON April 30th Mr. John Burns introduced into the House of Commons a Bill to substitute a statutory declaration for the certificate required under Section 2 of the Vaccination Act, 1898, of conscientious objection. The Bill is very short and its principle is contained in Section 1 of Clause 1, which runs as follows:—

> 1. *No* parent or other person shall be liable to any penalty under Section 29 or Section 31 of the Vaccination Act, 1867, if within four months from the birth of the child he makes a statutory declaration that he conscientiously believes that vaccination would be prejudicial to the health of the child and within seven days thereafter delivers the declaration to the vaccination officer of the district.

If Mr. Burns fancies that by this Bill he will soften the manners of Mr. Lupton and his fellow antivaccinationists and not allow them to be ferocious we fear he will meet with disappointment. Dr. W. R. Hadwen has already written to a morning contemporary stating that the Bill can only be accepted by antivaccinationists as an instalment. Vaccination, of course, in the eyes of a certain class of mind is responsible for nearly all the evils in the world, and a study of antivaccination literature makes the reader think that those who write it look upon Jenner's discovery in the same manner as our forefathers did upon Napoleon in the early days of the nineteenth century. The question "Who fills the butchers' shops with large blue flies?" is ever on their lips, the answer being "vaccination!"

## AN OUTBREAK OF FOOD POISONING.

WE have received a copy of a report prepared by Mr. William Berry, medical officer of health of the county borough of Wigan, on an outbreak of poisoning due to potted tongues sold for food at the Market Hall, Wigan, on Jan. 11th and 12th. So far as could be determined, 168 cases in 60 different houses came under the observation of medical practitioners in Wigan, Adlington, Ince, Platt Bridge, Skelmersdale, and Standish, but it is probable that there were in addition mild cases to which no medical aid was summoned. The first cases reported to the health department were due to some of the tongue bought on Jan. 12th and eaten that same night, the first symptoms appearing early on the morning of the 14th, 36 hours afterwards. The symptoms were severe and lasted for three or four days, recovery occurring in all of them. On investigation it was found that all the cases could be referred to the one source and, further, that every person who had partaken of this particular food was attacked with symptoms of food poisoning of greater or less severity. The butcher's stall and shop were at once visited, a thorough inspection was made, and the remains of the unsold tongue, then becoming putrid, were taken possession of. Investigation showed that the particular tongues (pigs' and beef) were placed in brine on Thursday and Saturday (Jan. 3rd and 5th). They remained in it for three or four days, were taken out on Tuesday (Jan. 8th), boiled on Wednesday, and taken to the market on Thursday to be ready for sale on Friday, Jan. 11th. Two tins of beef tongue, each weighing about 20 pounds, and one tin of pig's tongue, weighing about 12 pounds, were made and exposed for sale. The examination of the usual methods of procedure showed that in addition briskets of beef are prepared in a similar manner by this butcher. The beef and the beef tongues are bought at Birkenhead, but the pigs which come from Ireland are slaughtered on the premises of the butcher. There are five brine tubs, kept in a cellar under the fish market, where are stored also hams and sides of bacon for salting. One of these barrels is used for brisket of beef for

preparing "pressed pickled beef," two are used for pigs' heads, and one small one for pigs' and beef tongues. The brine is prepared by taking two buckets of salt, six buckets of water, three-quarters of a pound of saltpetre, and half a handful of sugar. The cooking is carried out in pans at the slaughter-house and examination of these showed them to be clean. After boiling the tongues are taken out, placed in tin and mug receptacles, pressed slightly, and then allowed to cool. After cooling they are again pressed and hot jelly, prepared from pigs' heads, is poured on. To discover the origin of the contamination of the tongues sold on this occasion Mr. Berry took samples of salt and freshly made brine, some freshly salted pigs' and beef tongue, and one pig's and one beef tongue after salting and cooking, together with the remainder of the tongues causing the symptoms of poisoning, and submitted them for examination to Dr. W. B. Warrington at the Pathological Department of the University of Liverpool. The salt, saltpetre, and specially cooked tongues were found to be free from bacillus coli communis or bacillus enteritidis (Gaertner). In the salted uncooked tongues bacillus coli communis was isolated from the pig's tongue and a somewhat similar but not identical organism from the beef tongue, while in the tongue to which the outbreak was due both bacillus coli, or an organism similar to it, and bacillus enteritidis of Gaertner were found. Mr. Berry therefore concludes that the cause of the mischief has been the brine in which the tongues were placed before cooking, but unfortunately the brine used on this occasion was thrown away and could not therefore be examined bacteriologically. He recommends that in all cases where salting has to be done fresh brine should be used for each batch and no additions should be made to it after the tongues or other meat have been put in. This seems certainly a reasonable precaution but in addition means should be taken to prevent the salting of contaminated material, since doubtless if the brine were the cause of the infection of the particular tongues it must have itself become infected from some other source, probably infected meat. The long incubation in these cases before symptoms supervened demonstrates that this outbreak was probably due to the bacillus enteritidis and its toxins rather than to ptomaine poisoning in the strict sense of the word, and since the toxins of bacillus enteritidis and some of the other organisms responsible for food poisoning are not destroyed by boiling even for half an hour, the only effective prophylaxis against outbreaks such as the present must be a more careful examination of the origin of meat offered for human consumption.

## THE PHYSICIAN'S HOLIDAY.

"IT is your genuine worker," writes an Italian contributor, "who really enjoys a holiday; nay, more, who can make that holiday an occasion of enriching other fields of knowledge or culture outside his own. The science, the literature, the fine art of previous generations teem with instances of such employment of well-earned leisure—instances, moreover, in which the medical man appears to exceptional advantage. Italy, in the day now passing, supplies us with one of these in the indefatigable professor of physiology at Turin, Dr. Angelo Mosso, who is employing a temporary leave of absence from the laboratory and the lecture room in prehistoric research in Sicily, where, in the province of Girgenti, he has found a pleasant pastime in unearthing a neolithic village. Cannatello, the village in question, has yielded to his well-inspired 'spade work' quite a fund of treasure-trove, besides disclosing a 'piazza circolare' which he describes as an 'absolute novelty' in the neolithic architecture of Southern Italy—the said 'piazza' being well paved and presenting five cabins built with great blocks of stone. Other cabins in the villages are, he says, wonderfully conserved and demonstrate the tectonic ability of their neolithic builders, while the pavement of the intersecting streets contains fragments of straw recalling the 'technique' of similar work in Troy. 'Tables of libation' he also found, showing intercourse with Crete, confirmed by other finds in votive offerings, and 'astragali.' A tomb excavated by him at Sant' Angelo Muxaro contained 45 vases quite entire and without a flaw, and these he has made over to the museum at Palermo. Although this tomb may be assigned to the last centuries preceding the Hellenic invasion the vases found in it indicate by their decoration a yet remoter epoch, their ribbons and cords resembling those of the 'epoca neopatica' of Central Europe. To the 'vasi di steatite' Professor Mosso attaches special importance as substantiating the prehistoric relations of Crete with Sicily. Other details hardly less striking are given in the special report which he has just sent to the Minister of Public Instruction, to whose department all excavation work in Italy belongs, and the elaborate monograph in which the results of his 'archæological holiday' will ere long be embodied is, I need hardly say, awaited with interest wherever prehistoric research is held in honour. Professor Mosso's latest utilisation of 'well-earned leisure' has often had its counterpart in the British Isles and would have greatly impressed such men as Dr. James Cowles Prichard of Bristol and Sir J. Y. Simpson of Edinburgh, whose 'recreation' from professional work lay in similar research. It was in exploring and illustrating for his contemporaries the old site of Pompeii and Herculaneum that Dr. Hughes Bennett, himself like Dr. Mosso a professor of physiology, found congenial distraction, and in the "sixties" of the last century Dr. King Chambers enriched THE LANCET with his impressions, antiquarian and other, of the Italian kingdom, afterwards published in a volume still highly esteemed. Germany, too, can point to the salutary results of the 'physician's holiday' in the incomparable guide to Italy of Dr. Gsell-Fels—a work which the English historian Freeman assured me was of the greatest service to him in preparing his monumental book on Sicily, a work, moreover, which the late Camden professor of ancient history at Oxford, as I can testify, used to excellent purpose in preparing his lectures and which he often quoted to me as an example of how history and archæology could be made to profit by an accomplished 'physician on his holiday.'"

## THE COAGULATION OF BLOOD AND THE EFFECTS OF CERTAIN DRUGS AND TOXINS UPON IT.

IN an article with the above heading, published in the April number of the *Bio-chemical Journal* (vol. ii., No. 4, 1907), Dr. C. J. Coleman gives the results of his recent investigations. The influence of fluids containing solutions of salts or drugs injected subcutaneously upon the rapidity with which coagulation of the blood takes place is more difficult to determine than might at first sight appear. In the first place the time is not the same in different individuals. It is not the same even in the same person at different times of the day, the longest coagulation time occurring about one hour after the principal meals, which is probably attributable to the changes in the blood effected by absorption of the products of digestion, whilst on the contrary the shortest time is recorded when the subject is fasting before breakfast. Then, again, the influence of exercise and of temperature must be taken into consideration, 15 or 20 minutes of severe physical exertion or a slight rise in temperature appearing to effect a certain amount of shortening of the coagulation time. Lastly, it was found that the method employed or the instruments used for the abstraction of the blood were of importance in the determination of the time. The method employed by Dr. Coleman was to shave and to cleanse the ear of rabbits and to obtain a specimen of blood by pricking the marginal vein. Then the animal being kept fasting to set aside as far as

possible the disturbing influence of food a definite quantity of blood was withdrawn, and the time tested either by Brodie and Russell's coagulometer or by Wright's instrument described in our pages,[1] some advantages attaching to each. In experimenting on the influence of drugs or other agents on the coagulation time, therefore, it is important that the same conditions should be preserved as far as practicable. The drugs, it may be remarked, were injected subcutaneously with a hypodermic syringe. The effects of milk were first examined both in suckling and adult animals and it was found in opposition to the observations of Wright and Paramore to have very little, if any, effect in either accelerating or retarding coagulation. In other experiments on rabbits Dr. Coleman found that the administration of citric acid lengthens the time of coagulation by forming sodium citrate. The hypodermic injection of calcium chloride shortens the time of coagulation. Solutions of normal saline injected subcutaneously have a pronounced effect in diminishing the time of coagulability of the blood. The injection of β-naphthylamine lengthens it, due in all probability to the accompanying pyrexia, since the effect is not obtained if the pyretic phenomena are absent, as is occasionally observed. The subcutaneous injection of diphtheria toxins augments the time of coagulation. Finally, it was found that when leucocytosis occurs either as the result of some pathological condition or of the hypodermic injection of a drug there is a lengthening of the time of coagulation of the blood.

## IS CHICORY INJURIOUS?

THE above may seem a startling question to ask, for chicory has been abundantly mixed with coffee for a great many years and we cannot recall a single instance in proceedings taken under the Sale of Food and Drugs Act in which it was urged that chicory was injurious. When a mixture of coffee and chicory is sold as coffee an offence is, of course, committed in accordance with the terms of Section 6 of the Act, which requires that no person shall sell to the prejudice of the purchaser any article of food which is not of the nature, substance, and quality demanded by the purchaser. On the other hand, if it can be shown that chicory is injurious to health it is clear that the proceedings could be based on Section 3 of the Act which demands that no person shall mix, colour, stain, or powder any article of food with any ingredient or material so as to render the article injurious to health. During the hearing of an action for slander, which was decided in favour of the plaintiff in the High Court last week, one witness stated that the selling of 50 per cent. chicory and coffee mixture was likely to cause a great deal of disease in a poor neighbourhood, and a medical man also stated that from his medical experience in poor districts coffee mixed with chicory often set up irritant poisoning. Mr. Justice Bigham admitted some interest in this statement, since he said he had been in the habit for many years of drinking a mixture of chicory and coffee. The chemistry of chicory does not appear to be as clear as it might be. We are merely told that it contains some volatile oil, a bitter substance, and a large proportion of caramel. It answers the purpose of the substitution-monger admirably in giving intensity of colour to coffee infusion, rendering it fuller flavoured than when coffee is used alone. The introduction of chicory for this purpose did much to diminish the popularity of coffee in this country. The consumption of coffee may have fallen owing possibly to the flavour of chicory being disliked or there may have been a real dietetic reason and some persons may have found that chicory disagreed with them. Against this view, however, is the fact that in some parts of the continent an infusion of chicory is drunk pure and apparently without prejudicial effects. Most dietetic authorities seem to agree that there is no reason for believing that chicory is in any way injurious to health, and after all it is merely the root of a wild endive, kiln-dried, and broken in fragments. Still, many roots contain injurious substances and the subject seems to call for more serious investigation than it has hitherto appeared to receive.

[1] THE LANCET, Oct. 14th, 1905, p. 1096.

## THE SIXTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

AT the Fifteenth International Congress of Medicine held in Lisbon in 1906 it was decided that the next meeting of the congress should be in Budapest, the capital of Hungary. It is now announced that the Sixteenth Congress will be opened in Budapest on August 29th, 1909, and that it will continue to Sept. 4th. The work of the meetings will be conducted in 21 sections. Professor Calman Müller is the president and Professor Emil Grósz is the general secretary. The offices of the various committees in charge of the arrangements are at Esterházy-utcza 7, Budapest VIII.

## TRAUMATIC ASPHYXIA.

TRAUMATIC asphyxia (asphyxia due to pressure on the chest) is a rare condition which has seldom been studied during life. Our knowledge of it has principally been gained from examination of the bodies of persons pressed to death in struggling crowds. Many of the occasions on which this accident has occurred are historical. At the Champs de Mars in 1837 23 persons were crushed to death in the rush of the mob; in the fire at the Vienna Ring Theatre nearly 1000 persons perished in this way; and in the panic at the Victoria Hall, Sunderland, 200 children were asphyxiated by being crushed in a corridor. In the *Canadian Medical Journal* for April Dr. E. S. Ryerson has reported the following case. A boy, aged five years, was admitted into hospital on May 9th, 1906, for injuries which he had received about an hour previously while riding on the back of a lorry. In some way he was caught between the hind wheel and the spring, stopping the wheel and making it drag along the ground for some feet and thus attracting the driver's attention. He was picked up unconscious, black in the face, and breathing with difficulty. On admission there were marked symptoms of shock; he was cold and shivering and his teeth chattered; his face was pallid and his pulse was weak and rapid. Consciousness was dulled but questions roused him. His eyes were tightly closed as if he suffered from photophobia. On the head, trunk, and limbs were contusions and abrasions. His face and neck presented a deep blue mottled appearance which shaded off and disappeared over the upper chest. The pallor of the face could be seen through the blue discolouration. The dark blue spots were small and circular and separated by bands of normal skin. They were not influenced by pressure. On the face and neck they were so close together that they resembled a diffuse ecchymosis. In the clavicular regions they were separated by larger areas of normal skin and followed the distribution of the vessels. The eyelids were blue and swollen and could be opened only by force. The conjunctivæ projected over the corneæ from hæmorrhagic effusion beneath them. The respirations were regular but shallow. The heart sounds were irregular but moderately strong. On the 10th he was quite conscious but drowsy; the temperature was 99° F., the pulse was 120, and the respirations were 30. The eyes were still kept closed. The pallor had disappeared and the blueness was not so deep. On the 11th he was bright and sitting up in bed. The blue spots had faded considerably; the conjunctivæ were almost black. Some blue spots were found on the soft palate. On the 23rd he was running about the

ward. All discolouration had disappeared from the face and neck and the colour of the subconjunctival hæmorrhage was less marked. The question of the cause of the blue discolouration, which has been termed "the ecchymotic mask," is interesting. In this case it could not have been due to cyanosis because it did not disappear on pressure and because there were bands of normal skin between the discoloured areas. Was it due to hæmorrhage? The conjunctival discolouration undoubtedly was and hæmorrhages or ecchymoses undoubtedly may occur in traumatic asphyxia. But the fact that the colour disappeared without the changes occurring which extravasated blood undergoes is opposed to this view. Ollivier suggested that such discolouration is due to stasis of carbonised blood in dilated and temporarily paralysed capillaries. This was verified by Beach and Cobb of Boston, who excised portions of discoloured skin and examined them microscopically.[1] Every section showed normal skin with enormous distension of the small veins and capillaries. As to the mechanism of production, forcible compression of the chest and abdomen appears to cause a reflux of blood through the jugular veins, which are more feebly protected by valves than the veins of the limbs. This leads to distension of the small veins and capillaries.

## SHOP ASSISTANTS AND LIVING IN.

A MEETING of shop assistants recently convened in the City by the National Union of Shop Assistants, Warehousemen, and Clerks was largely attended and considerable interest was shown in the proceedings by those present. The immediate object of the meeting was to protest against a statement made at the Drapers' Chamber of Trade to the effect that assertions with regard to what is known as the "living-in" system put forward at a recent conference of shop assistants at Leeds were untrue and exaggerated. A resolution was carried at the meeting in the City referred to—

> That this meeting of shop assistants, warehousemen, and clerks of the City of London protests against the continuation of the living-in system as being detrimental to the moral, physical, and intellectual development of the employees; and further, calls upon the Government to include workers in the distributive trade in the Truck Acts.

It will be seen from this that the total abolition, not the regulation, of "living in" was the end proposed to, and approved of by, the meeting as desirable, the ambitions of the shop assistants being defined by a speaker as including "the right to say where they should lodge, what they should eat, when they should go in, and when they should go out." On the other hand, the present conditions were denounced as leading in some instances to the assistants "sleeping in rabbit-hutches and eating food which even a dock labourer would turn up his nose at." We suggest that the shop assistants and those interested in their welfare should concentrate their attack upon the sanitary defects of a system which has something to be said in its favour as well as against it, and should aim at securing by stringent regulations and their enforcement wholesome sleeping quarters and food together with reasonable liberty for those who now are deprived of them. They would be on safer ground in doing this than in demanding freedom to go in and out at night absolutely uncontrolled for young men and young women seeking to escape from restrictions which, although irksome, may be salutary. These young people are drawn from a very large and mixed class. Some of them go into "business" in preference to "service," and are more able, perhaps, to look after themselves than those of their companions who have been more gently nurtured. The supply of shop assistants is now so large that the employers evidently can impose their own conditions. On the other hand, the advertisements in daily and weekly newspapers are eloquent as to the lack of candidates for domestic service and the crowd of foreigners occupying situations as men servants tells a similar tale. Employers of both classes should find no sympathy on it being proved that they fail to provide adequate food and living accommodation for those dependent upon them, or that they curtail their liberty to such an extent as to injure their health, or even to deprive them of reasonable enjoyment. Employers may, however, be excused if they wish to exercise some supervision and control over the lives of those who work for them beyond the duration of the working day, and none the less so because an economy is effected by providing board and lodging upon a more or less large scale.

[1] Annals of Surgery, 1904.

## THE PREPARATION AND STRENGTH OF GREY OIL.

IN the *Journal de Pharmacie et de Chimie* of March 16th M. Camille Pépin draws attention to the great number of formulæ that are used for the preparation of grey oil for injection. As a result the products differ widely in consistence and in strength. Grey oil should be of such a consistence that it does not yield a deposit of mercury, and it should melt readily on the application of moderate heat when required for injection. M. Pépin recommends the following procedure in preparing grey oil. Hard and liquid paraffins are mixed by melting them together, the proportions being so adjusted that the product, when triturated with the mercury, does not separate on standing. As regards the strength of grey oil considerable variations exist owing partly to the fact that some operators calculate the percentage of mercury by weight and others by volume. As the oil is always injected by means of a graduated syringe it is preferable to adopt as a standard strength a known percentage of mercury by weight in volume. A strength of 0·2 gramme of mercury in one cubic centimetre of the oil is very convenient. With such a preparation and a Pravaz syringe graduated with 20 divisions to one cubic centimetre an accurate dose can be given, as each division represents one centigramme of mercury. The largest dose of mercury which is injected in practice is 0·14 gramme and this dose is contained in less than three-fourths of a cubic centimetre of the oil. It is very necessary that there should be uniformity in the preparation of so potent a remedy as grey oil. It is highly probable that the mishaps which have attended its use have been due, in some cases at least, to a confusion as regards the dose of mercury through the preparation of the oil by weight and its subsequent administration by volume.

## THE DISTRIBUTION OF THE TWO SPECIES OF BED BUG.

SOME knowledge of entomology is rapidly becoming a necessity for medical men practising in tropical or subtropical countries on account of the important part played by numerous insects in the causation of chronic and fatal diseases. Malaria, yellow fever, plague, sleeping sickness, and several diarrhœal diseases are typical examples of contagions communicable by insects. In the Milroy lectures on kala-azar in Assam, delivered before the Royal College of Physicians of London in February of the present year, Major Leonard Rogers, I.M.S., professor of pathology in the Medical College, Calcutta, brought forward evidence tending to show that the disease was spread by the bites of bed bugs,[1] and Captain W. S. Patton, I.M.S., of the King Institute, Madras, has published an article on the nomenclature of these insects in the *Indian Medical Gazette* for February, 1907. Captain Patton states that two species of these insects, known, however,

[1] THE LANCET, March 9th, 1907, p. 648.

under a variety of names, are associated with man. One of these, the commonly accepted name of which is cimex lectularius (L.), is distributed throughout Europe and North America. The other is the Indian bed bug which is distributed throughout India, Burma, Assam, the Malay peninsula, Aden, and the islands of Mauritius and Réunion. This insect was described in 1852 under the name of cimex rotundatus by M. Signoret who observed it in Réunion. In 1861 it was described as cimex macrocephalus by Fieber who observed it in Burma. Captain Patton has examined a very large collection of this species sent to him by medical officers and others from all parts of India, Burma, Assam, Aden, Mauritius, and Réunion. As they all belonged to one and the same species it is evident that cimex rotundatus and cimex macrocephalus are identical, and Captain Patton therefore proposes naming it cimex rotundatus (Sign.). Cimex lectularius (L.), the European bed bug, is also found in the North-West Frontier Province of India.

## THE SUPPLY OF PURE MILK TO HOSPITALS.

THE awakening of public interest in the important subject of the milk-supply for children bids fair to rank amongst the foremost achievements of preventive medicine during this first decade of the present century. Not a week passes but the matter is mentioned in some organ of the lay press, and this stirring of the national conscience to a concern for the salvage of its infant life has undoubtedly been caused by the authoritative warning note that is being continuously sounded by the medical profession. We have received from the secretary of the Hospital for Sick Children, Great Ormond-street, the minutes of a conference recently held at that hospital under the presidency of its chairman dealing with this matter: at this conference representatives from the eight London children's hospitals and one general hospital were present. Resolutions were passed, subject to the confirmation of the committees of these various hospitals, embodying the following recommendations:—

1. The milk shall be pure, genuine, and with all its cream as yielded by the cow and absolutely free from any and every kind of adulteration, including preservatives. It shall be of such a quality as will produce at least 3·50 per cent. of butter fat.
2. It shall be supplied from a farm or farms whose name or names and locality are notified to the hospital.
3. It shall be permissible for an authorised representative of the hospital to inspect such farm or farms at any reasonable time.
4. The cows supplying the milk shall be in a good state of health and a veterinary surgeon shall give a certificate to that effect once a quarter.
5. The milk shall be strained and refrigerated at the farm and there canned and sealed.
6. The milk shall be delivered sealed at the hospital.
7. It shall not be "Pasteurised" or treated otherwise than as mentioned in Clause 5 without the written sanction of the hospital authorities.
8. It is advisable that the milk be tested bacteriologically and chemically once a week by the hospital.
9. That the name of the medical officer of health of the district in which a supplying farm is situated be furnished by the contractor and that he be informed of the relations between the farm and the hospitals, and that he and the clerk of the urban or rural district council be supplied by the hospital for their information with a copy of these recommendations.
10. This conference invites the committees of the various hospitals interested to adopt the resolutions passed at this meeting.

This excellent scheme of supply is worthy of all support and we trust the committees of the hospitals concerned will see their way clear to adopt it. There seems no need for its limitation to children's hospitals, for the provision of an undoubtedly pure supply of such an important article of diet as is milk in the treatment of disease must obviously be of paramount importance to every hospital. It is impossible as yet to conceive the whole of an urban community being served in this way with milk of a guaranteed purity, but some of the above recommendations might be acted upon by the purveyors and transporters of milk for the London market in the general interests of the population. We are publishing a short series of articles upon the railway transport of London milk, and in each article our correspondent points out the terrible risks of contamination that ensue upon the invariable habit of sending the milk cans by train unfastened and unsealed.

## THE LIVERPOOL SCHOOL OF TROPICAL MEDICINE.

THE Liverpool School of Tropical Medicine sent out its eighteenth expedition by the Union Castle mail steamer *Kenilworth Castle* on May 4th. The expedition, which consists of Dr. Allan Kinghorn and Mr. R. Eustace Montgomery, will be dispatched to Central Africa to study sleeping sickness. The two members of the expedition were entertained to dinner on May 2nd by Sir Alfred Jones, K.C.M.G. (the chairman of the School of Tropical Medicine). Dr. Kinghorn, in the course of an interesting speech, said that the Liverpool School of Tropical Medicine had taken a leading part in investigating the dread diseases of the tropics. With regard to sleeping sickness he was convinced that it might easily spread into Rhodesia and other parts of our southern territory. The object of the expedition was not only to fight sleeping sickness in British territory but to work out some scheme to prevent its spread. That meant that the destruction of the tsetse fly must be aimed at and they hoped that a new cure would be found in the near future. Mr. Montgomery also spoke, remarking that if sleeping sickness reached India it would be difficult to say what might happen. Dr. J. L. Todd (a member of former expeditions) hoped that the school would pursue its researches and remarked that it had already advised a method of treatment known as the "prophylaxis," which was a remedial measure and of which much was anticipated. The company included Viscount Mountmorres, Sir Edward Russell, the Vice-President of the Liverpool Chamber of Commerce, the chairman of the African Association, Dr. J. W. W. Stephens (Walter Myers lecturer in tropical medicine), Dr. T. R. Glynn, Professor Benjamin Moore, and others.

## INTRAPLEURAL INJECTIONS OF FORMALIN IN RECURRENT PLEURAL EFFUSION.

THE repeated return of pleural effusion after aspiration is often a disappointment to the practitioner. In the *Boston Medical and Surgical Journal* of April 18th Dr. L. D. Chapin has reported the following case. A man, aged 29 years, came under observation on Oct. 5th, 1906. He stated that he was never robust and had suffered for five years from "asthma." About five weeks before he began to suffer from shortness of breath and fits of coughing. There were signs of bronchitis and of a left pleural cavity full of fluid. Paracentesis yielded three quarts of turbid serous fluid. The general condition was much improved and the dyspnœa was relieved for several days, but the fluid rapidly accumulated and a week after the paracentesis the same quantity of fluid was again removed. Nine days later the process was repeated. No tubercle bacilli could be found in the sputum or fluid removed and inoculation of guinea-pigs with the latter proved negative. The general condition was unsatisfactory. The attacks of coughing were frequent and exhausting, the appetite failed, and the patient seemed to lose ground daily. The temperature ranged from 99° F. in the morning to 102° in the evening. Three quarts of fluid were removed for the fourth time on Oct. 31st. On Nov. 8th a fifth paracentesis was necessary. Dr. J. B. Murphy of Chicago, to whom the case was mentioned, suggested the intrapleural injection of a 2 per cent. solution of formalin solution in glycerine. On Nov. 14th, after aspiration, one ounce of glycerine, containing ten drops of formalin, was injected through the needle. The fluid reaccumulated as before, but after a few days its height became stationary

and then it began to decline. The patient's general condition and appearance improved rapidly and the temperature fell to normal. On Dec. 12th the effusion had all disappeared. Convalescence followed.

## EPIDEMIC CEREBRO-SPINAL FEVER.

THE reported cases of epidemic cerebro-spinal fever show little change in the distribution of the disease throughout the country during the last seven or eight days. In London cases have occurred in Bermondsey and Islington, and the recovery of a lad admitted with this disease into the Whitechapel Poor-law infirmary eight weeks ago is announced. Other cases have occurred in Cumberland and Derby. In Scotland during the week ended May 4th there were 30 deaths from this cause registered in Glasgow, 7 in Edinburgh, 4 in Leith, 3 in Dundee, and 1 in Paisley. In Glasgow the weekly report issued on May 3rd showed that there were at that time 133 patients under treatment. Cases have also occurred at Dunfermline, at Cellardyke, at Forfar, and at Airdrie. In Belfast there has now been a total of 365 cases with 254 deaths, and there are at present about 40 patients under treatment. It is stated that the disease has made its appearance in the Victoria military barracks, Belfast.

THE Department of Public Health of Queensland in a bulletin dated March 31st states that for the five days ending Thursday, March 28th, no new cases of plague have been reported. The date of attack of the last case reported was March 17th. The date of the last bulletin was March 23rd. As regards the Mauritius, a telegram from the Governor received at the Colonial Office on May 3rd states that for the week ending May 2nd no cases of plague had been reported. A telegram from the Acting Governor as regards Hong-Kong received at the Colonial Office on May 6th states that for the week ending May 5th there were 4 cases of plague and 4 deaths from the disease.

A SESSIONAL meeting of the Royal Sanitary Institute will be held at the Parkes Museum on Wednesday, May 29th, at 8 P.M., when a discussion will take place on Suggested Amendments of the L.C.C. By-Laws as to Drainage, to be opened by Dr. Louis C. Parkes, medical officer of health of Chelsea, Mr. J. Patten Barber, M.Inst.C.E., borough engineer, Islington, and Mr. Isaac Young, chief sanitary inspector, Battersea. General discussion is invited. The chair will be taken at 8 P.M. by Sir Shirley F. Murphy. Tickets for admission of visitors may be had on application to Mr. E. White Wallis, secretary to the institution.

THE summer session of lectures at the Hospital for Sick Children, Great Ormond-street, W.C., will commence on May 16th. The lectures are delivered on Thursday afternoons at 4 P.M., and the opening lecture will be delivered by Mr. G. E. Waugh on Hip Disease in Children. On May 23rd Mr. J. H. Parsons will lecture on Congenital Squint. The lectures are free to all qualified medical practitioners.

THE Harben Lectures of the Royal Institute of Public Health will be delivered on June 5th, 7th, and 11th, at 5 P.M., by Professor Paul Ehrlich, the subject being Experimental Researches on Specific Therapeutics. The lectures will be delivered in the theatre of the institute, 37, Russell-square, W.C.

Dr. Teizo Iwai, physician to His Imperial Highness Prince Sadanaru Fushimi of Japan, who is now on a visit to this country as the representative of the Emperor of Japan, has been appointed an Honorary Member of the Fourth Class of the Royal Victorian Order.

THE Wightman lecture of the Society for the Study of Disease in Children will be delivered on Friday, May 17th, at 5 P.M., at 11, Chandos-street, Cavendish-square, W., by Dr. Frederick Taylor; the subject will be Pneumonia in Children.

Mr. J. Bland-Sutton, F.R.C.S. Eng., will deliver an address on the Problem of Cancer at the Institute of Hygiene on Tuesday, May 14th, at 3.30 P.M.

Dr. A. J. Rice Oxley has been appointed physician-in-ordinary to Her Royal Highness Princess Henry of Battenberg.

Brigade-Surgeon-Lieutenant-Colonel Charles E. Harrison, Grenadier Guards, has been appointed an Honorary Surgeon to the King.

## MEDICINE AND THE LAW.

*Quackery and Touting.*

AT a recent inquest at Dewsbury it was proved that the deceased had been attended by a medical man during an attack of influenza but that subsequently he suffered from dropsy, and upon the advice of a man who worked under him at the mill where they were employed consulted a person named Hall. After death had occurred Hall was asked by the widow for a certificate of its cause, and the letter in which he replied bore the significant heading, "Dr. Hall's Hygiene Company, 16, Broad-street, Pendleton." It contained an expression of the "company's" regret that the patient should have died and a suggestion that the medical practitioner who had previously attended him should be invited to certify. It also stated that the "company" was surprised at the widow's application as her late husband had known of their status and had been aware that they would be unable to give such a certificate as that asked for. The verdict of the jury in accordance with the medical evidence was to the effect that the deceased had "died from dropsy resulting from liver disease and aggravated by improper and ignorant treatment," and after their finding had been made known the coroner censured the widow for not obtaining medical advice for her husband when he became worse and was in a dying state. The case resembled many others in which foolish persons, not always of the least educated class, are deluded into applying to quacks, with the result that their lives are endangered or are sacrificed, but certain circumstances which the coroner sifted as far as he was able were serious enough to merit the attention which he very rightly gave to them. It was stated in the course of the inquest by the widow of the deceased that her late husband had been induced to consult "Dr. Hall's Hygiene Company" by a workman in the same mill and that the payments which he said he had made had consisted of £1 10*s.* to the former and £1 to the latter. The man in question, who was named Parker, was called and admitted that he had recommended Hall and had given the deceased the impression that Hall was a "proper doctor." He denied, however, that he received any commission from Hall. Parker's daughter then gave evidence to the effect that the £1 spoken of was for an appliance obtained from Hall for the deceased. She admitted, however, that she was Hall's agent for a certain district and that she received a commission upon what he obtained from patients introduced by her. She added that she accompanied the deceased to the quack who had then warned him of his danger and had advised him to consult a qualified practitioner. With regard to this, however, it must be added that medicine was produced which Hall had given to the deceased and which was stated to contain opium. The employment of agents paid by commission as described is a practice the dangers of which hardly require comment. The difficulty lies in preventing it in the existing condition of the law with regard to unqualified practice. It is to be hoped, however, that coroners when they have the

opportunity will call attention to it and to its results as Mr. Maitland, the coroner for Dewsbury, has done.

*An Incomplete Prescription.*

An interesting case is reported from Brabant, Belgium, in the *Pharmaceutical Journal* of April 27th. A medical practitioner prescribed 50 grammes of glycerine of carbolic acid without any indication as to its strength. As the practitioner was attending a confinement the druggist to whom the prescription was handed supplied a preparation consisting of equal parts of glycerine and carbolic acid, thinking that the liquid was intended to be used to make carbolic solution by the direction of the practitioner. Unfortunately the liquid was intended for washing the newly-born infant and naturally the result was severe burning, which proved fatal. The court at Nivelles fined the medical man 300 francs for having prescribed a poisonous substance without indicating its strength. The druggist was, in the circumstances, also fined an equal amount. The case was taken to the Court of Appeal at Brussels, and the verdict of the lower court was upheld so far as the druggist was concerned, but the medical man's fine was increased to 600 francs.

# Public Health and Poor Law.

## LOCAL GOVERNMENT BOARD.

### REPORTS OF MEDICAL OFFICERS OF HEALTH.

*Brighton County Borough.*—The current annual report relative to this district contains an instructive account of an outbreak made up of cases of scarlet fever and of sore-throat which occurred in Brighton and apparently also in certain neighbouring districts in October, 1906. The cases of sore-throat, which were regarded as "scarlatinal," were considerably in excess of those of scarlet fever. The chief interest attaching to the outbreak was the fact that advantage was able to be taken of a method of keeping the milk registers which some of the dairymen had at the instance of Dr. Arthur Newsholme, the medical officer of health, adopted a year previously. All those familiar with the investigation of outbreaks thought to be milk-borne are but too painfully aware of the enormous difficulty of determining with accuracy the precise source of any given churn or churns of milk, and those who have had no such experience can ascertain the proportions of the problem by a reference to the historical outbreak with which the "Hendon disease" is associated. Fortunately for the partial elucidation of this Brighton outbreak the milk-vendor with whose milk it was associated had kept the records of his milk sources in such a fashion that he could trace at once to the farm the milk supplying any houses or group of houses and hence it became an easy matter to fix suspicion upon a certain farm and in a much more expeditious fashion than is provided for under the Infectious Diseases (Prevention) Act to stop the supply of milk. Had the records referred to not been thus available it would have been necessary to stop the whole of the milk supplied by this dairyman, but the information procurable enabled an arrangement to be arrived at by which in consideration of a sum of about £93 the milk from the suspected farm was withdrawn from consumption for a week. Such withdrawal fortunately coincided with a cessation of the outbreak and everyone, including the milkman, was satisfied. It may, however, be stated that fortunately the evidence associating the outbreak with the milk was very strong, so strong, indeed, that we fully agree that the expenditure involved was justified. The actual source of the infection of the milk could not be determined, but on the evidence suspicion must be held to attach to the cows themselves. One cow had a pustule on its udder, but in the view of the veterinary inspector it did not resemble those present in the Hendon disease. It is, however, regrettable that the pressure of work was so great that no cultures from this lesion could be made, more especially as other cows had apparently abscesses on their udders. A further account of the clinical features of the outbreak would, too, have been of value, as the whole story suggests that a mixed infection may have been in question, and we are interested to note that this point is referred to in a footnote. But the outbreak shows the importance of coöperation between local authorities and milk vendors, and it will be an advance if milk vendors in other places can be induced to keep their register in such a fashion as will enable the source of a suspected milk to be fixed upon at once. Dr. Newsholme furnishes in his report an interesting account of the voluntary notification of pulmonary tuberculosis in Brighton and of the manner in which better results are obtained under this system in Brighton than are secured in Sheffield under the compulsory system.

*St. Anne's-on-the-Sea Urban District.*—Dr. Frederick Booth, as an outcome of the recent report of the Royal Commission on Tuberculosis, advocates the periodic examination of the cattle in this district by a duly appointed veterinary surgeon and the acquirement of powers similar to those conferred by what are known as the "Liverpool Milk Clauses"—i.e., power to inspect the milch cattle and farms from which milk is imported into the district. There is no doubt that although those clauses can now be somewhat improved upon the powers which they confer are of considerable potential and actual value.

*Surbiton Urban District.*—The council of this district has shown itself alive to the importance of controlling the spread of tuberculosis from tuberculous cattle, and in 1900 it appointed a veterinary inspector to inspect at three monthly intervals every cow in the district which is kept for trade purposes. The council has also endeavoured to induce neighbouring sanitary authorities to take similar action in order that areas from which milk is introduced into Surbiton may be controlled adequately. Efforts have also been made to bring about coördination and coöperation as regards veterinary inspection in cows in adjoining districts. The last report of the Royal Commission should encourage Dr. M. Owen Coleman, the medical officer of health, to persist in his practices and efforts.

*The Borough of Eccles.*—Dr. W. M. Hamilton, the medical officer of health of this district, has been appointed by the corporation medical officer to the schools and in this capacity he has already carried out considerable inspectorial work amongst the scholars. Prior to his inspection the head teacher at the school is asked to have classified, according to standards, all children who are in any way defective and after examination of these children by the medical officer the parents are written to by the teachers, who have apparently entered enthusiastically into the work, advising that either a medical practitioner should be consulted or that the child should be taken to some suitable hospital. No actual treatment is undertaken by the examining officer, his duty being to ascertain the nature and extent of all defects. Enlarged tonsils, adenoids, and impaired sight and hearing have been the main defects noted, unless the presence of vermin can also be classed as a defect. Dr. Hamilton states that the fact of the examination has already led to more care and greater cleanliness.

## VITAL STATISTICS.

### HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8379 births and 4885 deaths were registered during the week ending May 4th. The annual rate of mortality, which had declined from 17·9 per 1000 to 16·0 in the four preceding weeks, further fell to 15·9 in the week under notice. During the first five weeks of the current quarter the death-rate in these towns averaged 16·7 per 1000, the rate during the same period in London being only 16·2. The lowest rates in the 76 towns last week were 6·4 in Hornsey, 6·8 in Bournemouth, 7·7 in Willesden, and 8·4 in East Ham and in Reading; the rates in the other towns ranged upwards to 24·6 in Middlesbrough, 25·0 in Oldham, 27·3 in Rochdale, and 30·5 in Tynemouth. The 4885 deaths in the 76 towns showed a further decline of 25 from the decreasing numbers in the four preceding weeks, and included 530 which were referred to the principal epidemic diseases, against numbers ranging between 569 and 506 in the four previous weeks; of these, 197 resulted from measles, 176 from whooping-cough, 59 from diphtheria, 46 from diarrhœa, 34 from scarlet fever, and 18 from "fever" (principally enteric), but not one from small-pox. No death from any of these epidemic diseases was registered last week in Halifax, Huddersfield, York, Ipswich, or in four other smaller towns; the annual death-rates from these diseases, however, ranged upwards in the other towns to 3·4 in St. Helens, 3·6 in Middlesbrough, 4·5 in Portsmouth, 5·1 in Salford, and 5·4 in Hanley. The fatal cases of measles

in the 76 towns showed a decline from the high numbers in recent weeks; the highest annual rates therefrom were 2·6 in Birkenhead, Bolton, and Middlesbrough, 3·8 in Portsmouth, and 3·9 in Hanley. The deaths from whooping-cough, on the other hand, exceeded the number in any previous week of this year, and caused death-rates equal to 2·1 in Tottenham, 2·2 in Grimsby, 2·3 in Hornsey, and 3·7 in Salford. The deaths referred to diphtheria and diarrhœa also showed some increase, the death-rate from the former disease being equal to 1·2 in Walthamstow and in Rochdale, and to 1·3 in Leyton and in Reading. Scarlet fever caused three deaths in Bootle, equal to a rate of 2·3 per 1000. Two deaths were referred to "fever" in Cardiff. One case of small-pox was under treatment in the Metropolitan Asylums Hospitals at the end of last week; it is the first case of this disease admitted to these hospitals since the end of June last. The number of scarlet fever patients in these hospitals and in the London Fever Hospital, which had been 2628 and 2649 in the two previous weeks, had further increased to 2671 at the end of the week under notice; 346 new cases were admitted during the week, against 361 and 360 in the two previous weeks. The deaths referred to pneumonia and other diseases of the respiratory organs in London, which had steadily declined from 412 to 295 in the four previous weeks, further declined last week to 282, but exceeded by 24 the corrected average number in the corresponding week of the five years 1902–06. The causes of 50, or 1·0 per cent., of the deaths registered during the week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Bristol, West Ham, Newcastle-on-Tyne, Salford, and in 45 other of the 76 towns; the proportion of uncertified deaths, however, again showed considerable proportional excess in Liverpool, Sunderland, Gateshead, and Rochdale.

### HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 20·0 and 20·6 per 1000 in the two preceding weeks, declined to 19·9 in the week ending May 4th, and exceeded by 4·0 the mean rate during the same week in the 76 large English towns. The rates in the eight Scotch towns ranged from 10·5 and 12·0 in Perth and Aberdeen to 21·5 in Glasgow and 25·6 in Greenock. The 690 deaths in the eight towns showed a decline of 24 from the number in the previous week, and included 106 which were referred to the principal epidemic diseases, against 133 and 121 in the two preceding weeks. These 106 deaths were equal to an annual rate of 3·1 per 1000, which exceeded by 1·4 the rate from the principal epidemic diseases in the 76 English towns; they included 46 from "fever," 44 from whooping-cough, six from measles, six from diarrhœa, three from scarlet fever, and one from diphtheria, but not one from small-pox. The 44 deaths referred to "fever" exceeded the numbers in either of the two preceding weeks, and included 31 in Glasgow, seven in Edinburgh, four in Leith, three in Dundee, and one in Paisley; all these 46 deaths from "fever," excepting one of the 31 in Glasgow, were certified as fatal cases of cerebro-spinal meningitis. The 44 deaths from whooping-cough showed a decline of eight from the number in the previous week; they included 36 in Glasgow and three both in Edinburgh and Paisley. Of the six fatal cases of measles four occurred in Glasgow and two in Leith; and the six deaths attributed to diarrhœa included three in Glasgow and two in Greenock. Two deaths from scarlet fever were recorded in Edinburgh. The deaths in the eight towns referred to diseases of the respiratory organs, including pneumonia, which had been 103 and 109 in the two preceding weeks, further rose to 127 in the week under notice, but were ten below the number in the corresponding week of last year. The causes of 22, or 3·2 per cent., of the deaths registered in the eight towns during the week were not certified or not stated; in the 76 English towns the proportion of uncertified deaths in the week under notice did not exceed 1·0 per cent.

### HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been equal to 27·1 and 33·5 per 1000 in the two preceding weeks, declined to 26·4 in the week ending May 4th. During the first five weeks of the current quarter the death-rate in the city averaged 28·4 per 1000; the rates during the same period did not exceed 16·2 in London and 18·3 in Edinburgh. The 198 deaths of Dublin residents during the week under notice showed a decline of 53 from the high number in the previous week, and included 14 which were referred to the principal epidemic diseases, against 18 and 29 in the two preceding weeks; of these, ten resulted from whooping-cough, three from measles, and one from diarrhœa, but not one either from small-pox, scarlet fever, diphtheria, or "fever." These 14 deaths were equal to an annual rate of 1·9 per 1000, the rate during the same week from the principal epidemic diseases being 1·6 in London and 1·8 in Edinburgh. The fatal cases of whooping-cough and measles showed a decline of five and seven respectively from the high numbers returned in the previous week. The 198 deaths from all causes included 36 of children under one year of age and 45 of persons aged upwards of 60 years; each of these numbers showed a marked decline. 11 inquest cases and five deaths from violence were registered; and 87, or 43·9 per cent., of the deaths occurred in public institutions. The causes of four, or 2·0 per cent., of the deaths in Dublin were not certified; the percentage of uncertified deaths during the week did not exceed 1·0 in London, while it was 4·3 in Edinburgh. The 169 deaths registered in Belfast during the week under notice included 25 which were referred to cerebro-spinal fever or cerebro-spinal meningitis, showing a decline of two from the number in each of the two preceding weeks.

## THE SERVICES.

### ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeons: A. L. Christie to the *Sappho;* G. G. Borrett to the *Royal Arthur;* and A. M. Page to the *Nile.* Staff-Surgeons: A. H. Jeremy to the *Carnarvon,* on recommissioning; H. B. Hall to the *St. George;* and J. W. Craig to the *Royal Arthur.* Surgeons: W. E. Ormsby to the *Tamar;* and B. R. Bickford to the *Excellent,* for the *Grafton.* Civil Practitioner: M. O'Brien to be Surgeon and Agent at the Isles of Arran, Galway. Staff Surgeon Arthur Reginald Bankart, M.V.O., K.H.P., has been promoted to the rank of Fleet Surgeon in His Majesty's Fleet (dated May 5th, 1907).

### GRENADIER GUARDS.

Brigade-Surgeon-Lieutenant-Colonel Charles E. Harrison, Grenadier Guards, to be an Honorary Surgeon to the King, and to be a Brevet Colonel, *vice* Surgeon-General Sir H. J. K. Innes, K.C.B., deceased (dated March 13th, 1907).

### ARMY MEDICAL SERVICE.

Lieutenant-Colonel Arthur P. O'Connor, C.B., from the Royal Army Medical Corps, to be Colonel (dated April 5th, 1907).

### ROYAL ARMY MEDICAL CORPS.

The undermentioned Captains to be Majors (dated April 29th, 1907):—Septimus H. Fairrie, George T. K. Maurice, Francis E. Gunter, and John H. Campbell, D.S.O. The seconding for service with the Egyptian Army of Lieutenant Marcus G. Dill bears date Feb. 14th, 1907.

### INDIAN MEDICAL SERVICE.

The King has approved of the following promotions among officers of the Indian Medical Service:—Captains to be Majors (dated Jan. 29th, 1907): Charles John Robertson-Milne, Algernon Francis Stevens, Clement Henry Bensley, Francis Hammond Watling, Samuel Evans, Edgar John Morgan, James Haldane McDonald, Frank Wall, Charles Montague Mathew, John Stephenson, Frank Needham Windsor, Walter Barrie Turnbull, Ernest Edwin Waters, Edmund Moritz Illington, and Charles George Webster.

The King has also approved of the retirement of the undermentioned officers:—Surgeon-General Adam Scott Reid, C.B. (dated March 25th, 1907), and Lieutenant-Colonel Montague Stokes Eyre (dated April 7th, 1907).

### ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Major George Hollies, to be Surgeon-Lieutenant-Colonel (dated April 16th, 1907).

### VOLUNTEER CORPS.

*Royal Engineers (Volunteers).*—3rd Lancashire: Samuel English to be Surgeon-Lieutenant (dated March 30th, 1907).

*Rifle.*—4th Volunteer Battalion, The Royal Fusiliers (City of London Regiment): Surgeon-Lieutenant J. K. Brownlees resigns his commission (dated March 25th, 1907). 1st Dumbartonshire Volunteer Rifle Corps: Surgeon-Lieutenant A. G. Hay, to be Surgeon-Captain (dated March 1st, 1907).

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Eastern Command: Woolwich Companies: Captain T. W. Bartlett resigns his commission (dated March 31st, 1907).

MR. HALDANE'S ARMY SCHEME.

The motion of the Prime Minister for confining discussion on the Territorial Army Bill to a limited period recently occupied the attention of the House of Commons and was carried. On a previous occasion in the House of Lords the Earl of Wemyss put a question to the Under Secretary for War having a very important bearing upon the new Army scheme—namely, as to the minimum age of soldiers for foreign service. About this we are probably destined to hear more, for notwithstanding the results of previous experience the temptation is always in the event of any pressure to embark soldiers for service in India whilst they are still too young and immature for the work and climate. This is a matter which calls for serious consideration if we are to avoid the occurrence of much unnecessary sickness and inefficiency in that country. Mr. Haldane has, as everyone knows, addressed himself to the question of army reform with great constructive skill and boldness and his scheme, about the success of which much difference of opinion prevails, nevertheless holds the field and is, we imagine, bound to be adopted and tried.

TINNED MEAT RATIONS.

The War Office has sent out the following circular to all the commands in the home stations in giving instructions for the weekly issue of one pound of preserved meat to the army in lieu of fresh-killed meat:—

The establishments in which the brands of American tinned meat now being issued to the troops are manufactured have been carefully inspected by officers sent specially to America for the purpose, and their reports have satisfied the Army Council that the quality of the tinned meat used, and the conditions under which it is prepared and canned by the firms now supplying the army, are in every way satisfactory.

THE UNITED SERVICE MEDICAL SOCIETY.

A meeting of medical officers in the Navy, Army, Indian Service, and Auxiliary Forces was held at the Royal United Service Institution, Whitehall, S.W., on May 2nd, when a society to be known as the United Service Medical Society was formed for the furtherance of the sciences bearing on the preservation of health among the forces afloat and ashore, at home and abroad, in war and in peace. Inspector-General H. M. Ellis, Director-General of the Medical Department of the Royal Navy, who presided, said that the present was a peculiarly fitting time for the formation of such a society, as the Royal Army Medical Corps had now got a home in London and it was from the Army Medical Department that the inception of the movement had come. Inspector-General Ellis was elected to be president of the society for one year, Fleet Surgeon W. W. Pryn, R.N., and Lieutenant-Colonel C. H. Melville, R.A.M.C., were appointed honorary secretaries, and Lieutenant-Colonel D. Wardrop, R.A.M.C., was appointed honorary treasurer. The affairs of the society will be managed by a council consisting of the president and eight officers elected by the society, representing the different services.

THE ROYAL ARMY TEMPERANCE ASSOCIATION.

A conference in connexion with the Royal Army Temperance Association was held on the morning of May 3rd, at Caxton Hall, Westminster, at which General Lord Methuen presided. The annual meeting was held in the afternoon, under the presidency of Mr. Haldane. Mr. Haldane, before presenting the awards gained by those units in the various branches of the army which contained the highest percentage of abstainers, gave an address in which he remarked that perhaps one reason why the army had not always been as popular as was desirable was that the people had not felt that the personal lives of the men reached the desired level. Recent years had, however, seen a change for the better. The army was better looked after and better paid; the terms of service were better suited to the habits and needs of the people and the men had better chances of employment afterwards. But the difficulty of getting recruits meant that something was wrong. The tradition which kept men back dated from the period when they were secured almost, or even quite, by compulsion, when no one looked after them at all, and when everyone, without exception of rank, drank to excess. Officers, non-commissioned officers, and men realised now the enormous waste of physical, intellectual, and moral force to which drinking led. The key to a larger supply of recruits lay in an improved social condition of the army. Therefore, the work of the social reformer and the minister of religion was just as real as that of the army surgeon and those who prepared the men for fighting. He was glad that the association had decided not to exclude the really moderate drinker.

# Correspondence.

"Audi alteram partem."

## DOURINE IN CANADA.

*To the Editors of* THE LANCET.

SIRS,—Pathologists will be interested in the information that the trypanosoma equiperdum has been found in a mare clinically affected with dourine, or *maladie du coit*, at the quarantine station established by the Department of Agriculture at Lethbridge, Alberta, in 1904. The first demonstration was made by Dr. E. A. Watson and Dr. M. V. Gallivan on Feb. 11th, 1907, in material taken from a vesicle on the mucous membrane of the vagina of the animal above referred to, which was found to be affected with dourine on the premises of her owner near Lethbridge, on Dec. 21st, 1906, and was subsequently removed to the quarantine station for purposes of experimental observation. The disease was successfully transmitted in February to a yearling filly and the parasite subsequently observed in preparations from a fresh plaque. The finding was confirmed by Dr. C. H. Higgins, pathologist of the department, on March 21st, and was further observed in preparations taken by him on the 23rd and 25th of the same month.

The identity of dourine, or *maladie du coit*, as seen on this continent and hitherto diagnosed by American and Canadian veterinarians from clinical manifestations alone, with the disease as known in Africa and Asia, as well as in Southern Europe, is thus fully established. A detailed report of the discovery and of the work which led up to it, as well as of the steps subsequently taken, will be issued at the earliest possible date.

I have the honour to be, Sirs, your obedient servant,

J. G. RUTHERFORD,
Veterinary Director General.

Ottawa, April 19th, 1907.

## LARGE VESICAL CALCULI.

*To the Editors of* THE LANCET.

SIRS,—On Feb. 16th, 1907, you kindly published in THE LANCET a short note on a case of large vesical calculus which I had removed. I there stated that it was the largest calculus successfully removed of which I had seen a record. I quoted from "Anomalies and Curiosities of Medicine," Gould and Pyle, published in 1900. I thought the writers would have exhaustively looked up the subject and that if they had not found a record of a larger stone I might safely conclude that no such record existed. Since then I have found out there are larger stones which have been successfully removed and shall be much obliged if you will allow me to make the necessary corrections.

Dr. F. M. Sandwith's letter in THE LANCET of Feb. 23rd recalls Mr. H. M. N. Milton's case reported in THE LANCET of Sept. 16th, 1893, of a stone weighing 34½ ounces removed from an Egyptian fellah by the suprapubic operation in which the peritoneum was opened in order to extract the stone. The patient died two months after the operation. The stone is now in the museum of the Royal College of Surgeons of England. I have also received a letter from Dr. F. C. Madden of Cairo referring to this case and telling me of another successfully removed by Mr. Milton by crushing weighing 20 ounces. Sir Thomas Smith kindly wrote to me calling my attention to the case he had successfully operated on, the stone weighing 24½ ounces and recorded in THE LANCET of August 7th, 1886. He also referred to some other large stones unsuccessfully removed:

Dr. W. B. Hunter's case, a stone removed from an Indian native weighing 25 ounces; death ensued on the fourth day.[1] Mr. Walter Rivington's case; the stone was said to be larger but weighed less than Sir Thomas Smith's.[2] Mr. J. Rutherford Morison's case; the stone weighed 20½ ounces; death occurred on the fourteenth day. I also received a letter from Sir Constantine Holman telling me of large stones removed at Canterbury and Chichester. I have to thank Mr. T. Whitehead Reid of Canterbury and Dr. D. Ewart of Chichester for giving me information about these stones. The Canterbury stone weighed 10 ounces and the Chichester one 7 ounces 35 grains. Mr. R. Lawford Knaggs told me of Mr. N. C. Davies-Colley's case, for particulars of which I am indebted to Mr. A. Ralph Thompson. The stone was successfully removed by the suprapubic operation on Oct. 30th, 1896, and weighed 16 ounces. In Ashurst's "International Encyclopædia of Surgery" a case is referred to removed by Dunlop of Springfield, Ohio, from a patient, aged 66 years. The stone weighed 20 ounces and the patient lived three years after the operation.

Below is a list of successful cases which I have endeavoured to make as complete as possible:—

1. Milton: 34½ ounces; death two months after operation.
2. Sir Thomas Smith: 24½ ounces; complete recovery.
3. Dunlop: 20 ounces; patient lived three years.
4. Milton: 20 ounces; removed by lithotrity.
5. Littlewood: 18½ ounces; patient lived ten months.
6. Hatch: 17 ounces.
7. Davies-Colley: 16 ounces.
8. Harmen (Norwich): 15 ounces.
9. Mayo (Winchester): 14 ounces 2 drachms.
10. C. R. Pike (St. Vincent): 13½ ounces.
11. Clinè: 13 ounces.
12. Cheselden: 12 ounces.
13. Paré (1570): 9 ounces.

I think I may safely state that Mr. Milton of Cairo has successfully removed the largest recorded stone, the patient living two months; Sir Thomas Smith has removed the largest stone in which the patient completely recovered from the operation; and that the case I have recorded is the second largest stone successfully removed in Great Britain.

I am, Sirs, yours faithfully,

Leeds, May 4th, 1907. H. LITTLEWOOD.

## FEES FOR EXPERT EVIDENCE.

*To the Editors of* THE LANCET.

SIRS,—May I invite the attention of the profession through your columns to the subject of witnesses' fees for expert evidence? Some months back I was *invited* by a solicitor to give "proof" of evidence as to sanity of testator in a will case. I did so but stipulated *in writing* the amount of my fees for such attendance in London to give evidence. This I thought was a sufficient safeguard. I was afterwards subpœnaed and at great cost and trouble to myself had to go up to London twice and give evidence. The case was lost but the costs came out of the estate. The sum tendered me for my attendance leaves me actually out of pocket, as I received the merely *taxed* costs of the action. I have since learned that the plaintiff (of whom I knew nothing, having been engaged entirely by the solicitor) had no means whatever for entering on such an action. I am informed that I have no legal remedy, as I had no undertaking from the solicitor as to my costs. I suppose, therefore, that if the costs had not come out of the estate I should have got *nothing*. I may mention that all the other witnesses on the same side have suffered similarly. I would wish therefore to emphasise to my medical brethren the absolute necessity of obtaining a written guarantee from the solicitor engaging them as to the payment of their costs. I have often given evidence in medico-legal cases but shall never do so again without a due guarantee beforehand.

I am, Sirs, yours faithfully,

C. E. RICHMOND, B.Sc. Vict., F.R.C.S. Eng., &c.

May 6th, 1907.

*** Our correspondent rather confounds two things. The fee for *an examination and report* stands on exactly the same footing as any other medical service and the party on whose account the order may have been given is responsible for the payment. If there is any doubt as to the ability of the party to pay it is wise to ask for payment before the examination is made. As to the *charge for attendance in court* and proper travelling expenses payment for these can be claimed by any witness *before* he is sworn and the judge then directs the payment, but if a witness is sworn before making the claim he will have then to rely on the ability of the plaintiff or defendant, as the case may be, to make the payment. The judge has nothing whatever to do with the fee for the examination or in other words the qualifying fee.—ED. L.

[1] THE LANCET, Jan. 16th, 1886.
[2] THE LANCET, August 14th, 1886 (unsuccessful).

## PHARYNGO-KERATOSIS TREATED BY APPLICATIONS OF SALICYLIC ACID IN SULPHO-RICINATE OF SODA.

*To the Editors of* THE LANCET.

SIRS,—So many doubtful but alleged remedies eventually become stereotyped into the students' text-books to the chagrin of the practitioner and the patient alike that it would, perhaps, be as well at once to point out that Dr. Dundas Grant's "rigid experimental test" from a scientific standpoint—and I am only concerned with the scientific aspect of the matter—is really of little value. Dr. Grant addresses a letter to your issue of May 4th on the ground of supplying an omission; in that letter he himself makes a very material omission, for he makes no mention of the vigorous local treatment carried out for a month or six weeks immediately before the application of this "rigid experimental test." According to the official report (of which I inclose a copy), when the patient was first seen in March, 1906,

> Various isolated applications were made; in the first instance a saturated solution of salicylic acid in alcohol to the spots on the right tonsil, the galvano-cautery to those on the left one, then pure formalin to the left one, and a 10 per cent. solution of sulpho-ricinate of soda to the right. In April she was given a 1 per cent. solution of formalin in glycerine and distilled water, which she applied daily for a month, at the end of which time comparatively no change had taken place. In April, 1906, she commenced the daily application of a 10 per cent. solution of salicylic acid in sulpho-ricinate of soda.

With the result so vitiated by previous treatment it seems idle to dignify any subsequent application as a "rigid experimental test" which "showed incontrovertibly that the improvement was due to the application." The one rigid and incontrovertible fact in the case is that the patient was under this treatment for 12 months and at the end of that time was not cured.

I am, Sirs, yours faithfully,

May 7th, 1907. W. JOBSON HORNE.

## THE UNIVERSITY OF LONDON AND MEDICAL EDUCATION.

*To the Editors of* THE LANCET.

SIRS,—It was with considerable regret that I read your leading article on the above subject[1] because, in my opinion, you convey to your many readers scattered throughout the country an erroneous impression of the present constitution of the University and of the aims of a majority of the teachers which constitute its medical faculty. You have written: "There is an indication of a temporary ascendancy of reaction against the movement for the conversion of the old examining board into a real teaching University." The indication, I take it, is the recent election of Dr. J. Calvert and Dr. L. Hill to the Senate of the University. If that is so, then you are wrong in your inference that those who voted for them are "against the conversion of the old examining board into a real university." With the affiliation of the present medical schools in the University six years ago the days of the University as a medical examining board ended and those who voted for Dr. Calvert and Dr. Hill certainly do not wish to see those days back again. What they did vote against, and in my opinion rightly, was the introduction into London of a university of the type of the great German or Scotch universities. The present medical schools constitute the basis for an ideal medical faculty, which could be made better than any the world has ever seen. They are planted where they ought to be—under the walls of great hospitals; their teachers have liberty to work out the best that is in them; the students have individual attention. London is not a city in any sense of the word; and the university that serves Berlin or Edinburgh could not answer for London, which is an urban kingdom and ought to support at least 11 medical schools, the number to be

[1] THE LANCET, May 4th, p. 1235.

found in Scotland. Those who voted for Dr. Calvert and Dr. Hill have in their minds the development of such a university as I have so briefly outlined and wish to see these colleges of the University assisted and not crippled. The London medical schools deserve assistance; look at the research work and the teaching that is done in them. In every department of medicine they contribute more than a fair share to the progress of knowledge. With the best will in the world they are ready to compete with other universities and colleges which are supported by bounties in the shape of endowments. They are poor, contending, jealous, and ambitious, all points in their favour. They can command the best of the younger men who wish to become leaders in medicine. These are the aims of the "party of reaction"—aims which in their nature are certainly not reactionary.

I am, Sirs, yours faithfully,

ARTHUR KEITH.

London Hospital Medical College, E., May 6th, 1907.

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*To the Editors of* THE LANCET.

SIRS,—In your leading article in THE LANCET of May 4th on the University of London you hardly do justice to the body of graduates who are opposing the present policy of the Senate. For some years past the medical schools of London have experienced a decline in their annual entries. The undoubted cause of this decline has been the attractive influence of provincial universities. Although in actual practice every medical man is "doctor," yet the ordinary honest man feels compunction when using a title to which he has no claim. It is here that the many small universities exercise their greatest force in diverting the stream of students from London. But London stands pre-eminent in the enormous mass of clinical material, after all the greatest factor in our training, which it offers. It also possesses a University with a high standard for pass degrees. What it lacks, however, is an organised method of teaching. The slipshod methods of 50 years ago are inadequate to the requirements of the twentieth century. Whether reform will be best obtained by concentration is a matter for the teaching bodies who alone are best capable of judging. At the same time one must not lose sight of the fact that large sums of money are sunk in buildings expressly adapted to the requirements of elementary medical education. The fear that loss of capital will follow concentration must have weight in the minds of those affected.

Now we, the ordinary practising graduates of the University, find, or think we find, ourselves threatened by another danger. We say that the various alterations in the examinations of the University all tend to the more easy attainment of its degrees. We say that London can attain the position that it deserves by making its teaching adequate to its degrees, not by making its degrees fit its teaching. In my own case my father deliberately chose that his son should enter the University of London in preference to either of the old universities in the belief that the London degrees marked the high water mark of medical attainments.

The members of the Graduates' Association share the same belief, and it is in the enjoyment of this belief that they are pursuing the course that you, Sirs, term reactionary. The liberal progressive policy of the Senate to us appears only as a breach of faith.—I am, Sirs, yours faithfully,

Manchester, May 4th, 1907. M.D. LOND.

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A NEW HOSPITAL FOR INFANTS.—On May 2nd the Duchess of Albany laid the foundation-stone of a new hospital for infants at Vincent-square, Westminster, S.W. As explained to the company present by Lord Cheylesmore, chairman of the hospital committee, the hospital was founded four years ago by Mrs. Robert Mond in Denning-road, Hampstead, where accommodation was provided for 20 infants. This lady had not survived to see the remarkable success which had attended the work of this hospital in which during four years only more than 500 infants had been treated. Her husband, Mr. Robert Mond, however, had offered to erect the new hospital as a memorial to his wife at a cost of £30,000. Mr. J. S. Fletcher, M.P., in proposing a vote of thanks to the Duchess of Albany for her interest in the institution, dwelt upon the great prospects of future utility before the new hospital.

# SOME TURKISH LAZARETS

## AND OTHER SANITARY INSTITUTIONS IN THE NEAR EAST.

BY THE BRITISH DELEGATE ON THE CONSTANTINOPLE BOARD OF HEALTH.

(*With Reproductions of Photographs taken by the Author.*)

### III.[1]

THE CAMARAN LAZARET (*continued*).

*The Three Disinfecting Pavilions.—Modifications Proposed.—The "Douche Baths."—Moveable Disinfecting Stove.—The Mode of Housing the Pilgrims.—The Two Types of "Arish," Old and New.—Their Advantages and Disadvantages.—Stone Houses Recommended.—The "Specimen-house."—The "Houses of Distinction."—Tents.*

THERE are three large disinfecting pavilions at Camaran. All are situated near the sea and, roughly speaking, the first is between the first and second camps or cordons, the second between the third and fourth, and the third between the fifth and sixth. Under the plan proposed by the Commission the third pavilion will be transferred to a spot near the land end of the third landing stage, where it will serve for pilgrims going to the fifth and sixth cordons (in their new position). All three blocks are built on the same plan, but it is only at the first that the annexe for douche-baths has been built. The materials, however, exist for the construction of a similar annexe at each of the other two. They are large buildings, as may be seen in Fig. 5; they are solidly

FIG. 5.

Third disinfecting pavilion and water-tower.

built of the madreporic stone of the neighbourhood, covered (for the most part) with lime plaster. A large verandah, in matting, has been run up along one side of the first pavilion; but the material for a "pucca" verandah to all three has been bought and is in stock at the lazaret only waiting to be put up.

The internal arrangement of the first pavilion is shown in Plan I. The Commission's report contains two plans, one of the pavilion as it is and one as it will be when its proposals are carried out; it is the second of these that is reproduced on a small scale here. The pilgrims and baggage enter a large hall, some 20 metres long and seven metres wide, the floor of which is of brick and the roof of galvanised iron. This room has hitherto served for the sorting of the baggage, for the chemical disinfection of such objects as require it, for the undressing of the male pilgrims, and for their medical examination. As the Commission points out, it is impossible that each of these four operations can be properly carried out in one and the same room. There are, as a matter of fact, under the present arrangement, much disorder and confusion, the room being soon filled with chattering pilgrims and baggage of every kind; the sorting of the latter is not very perfectly done,

[1] Nos. I. and II. were published in THE LANCET of April 27th (p. 1188) and May 4th (p. 1251), 1907, respectively.

chemical disinfection is most indifferently performed, and a proper medical examination is almost impossible. It has been decided, therefore, to partition off the south end of the hall, which will be reserved for chemical disinfection; three large cement troughs will be constructed there, in which different chemical solutions can be prepared on a large scale. At the other end of the hall a space some 5 by 5½ metres will be partitioned off to make the men's undressing-room, and where the corridor leaves this to lead to the baths a small inclosure will be made for the medical visit. In this way every pilgrim must pass singly by the medical man before he can leave the undressing-room, and being already undressed the medical examination can be made both much more rapidly and much more thoroughly. The remainder of the large entrance hall will be used for the sorting of the baggage. That which can pass through the disinfecting stoves will be taken to them and the rest will pass to the room for chemical disinfection.

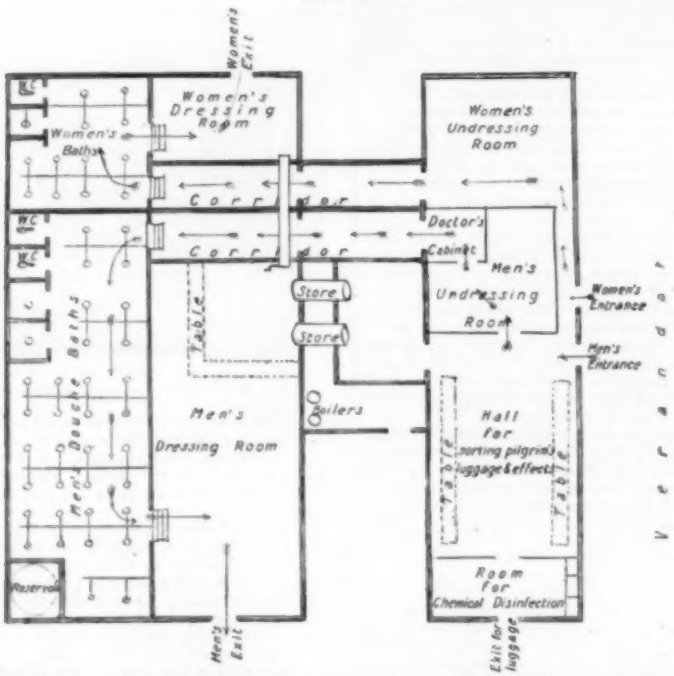
There are two disinfecting stoves in each pavilion, or six in all. Of the six three are from the firm of Geneste, Herscher, and Co. and three from that of Dehaitre. In each block there are two boilers, each of which can be used indifferently for either of the two stoves. The stoves pass through a partition wall which entirely cuts off the "infected" from the "clean" half of the building. The pilgrims' clothes and other objects not injured by steam are placed in the stoves at the "infected" end and removed at the "clean" end by other employees. The "clean" end is in the men's dressing-room. The women's clothes are transferred from this room across the two corridors to the women's dressing-room by means of a circular belt worked by a handle.

latrines (to be reduced to two), and the six others contain single douches for the better class pilgrims. Attendants arrange the pilgrims in rows under the douches; a signal is given and the water is turned on for a short time. The pilgrims are then well soaped all over and scrub themselves thoroughly or are scrubbed by the attendants; at another signal the water is turned on again to remove the soap and

FIG. 6.

Men's douche baths in the first disinfectin station.

PLAN.




Ground-plan of a disinfecting pavilion at the Camaran lazaret, with modifications proposed by the Commission. Scale 1 to 350.

The course followed by the men and women respectively is shown in Plan I. by means of arrows. It will suffice here to follow the men; having undressed, they receive a cloth, like that used in Turkish baths, and, having undergone the medical examination, they pass along a corridor to the "salle des bains-douches." This is a long hall with floors and walls of cement and the "roses" for the douches of warm sea-water in the ceiling (Fig. 6). Along one side of the hall is a series of cubicles, four of which are the pilgrims then pass into the dressing-room. This is another large hall 17½ metres long by 7 wide. Here they receive their disinfected clothes, dress, and pass out into the open by the door of exit.

For these arrangements as a whole I have nothing but praise. Several modifications of detail are proposed by the Commission, but with the exception of those mentioned above—the division of the large entrance hall into separate rooms for the four separate operations now imperfectly

conducted in the single hall—these modifications do not touch any point of capital importance. The completed disinfecting blocks at Camaran compare, indeed, favourably with those in any other lazaret I know.

Mention must here be made of a moveable disinfecting stove on wheels possessed by the lazaret. It was bought in 1898 from Geneste, Herscher, and Co. At present it stands unutilised in a shed. The Commission proposes to place it definitely in a small disinfecting pavilion to be built between the hospitals for ordinary and infectious diseases, which will be dealt with in a later article.

The pilgrims, having completed their bath and disinfection, enter the camps, or "cordons," in which they pass the rest of their quarantine. There are six of these cordons; their position and relative sizes are seen in Plan II.,[1] which shows the lazaret in its present condition. The second plan shows it as it will be after the proposals of the Commission have been carried out. It will be easier to understand what these proposals are and the reasons for them by describing first the kind of house occupied by the pilgrims; secondly, the cordon, which is made up of a group of such houses; and, thirdly, the arrangement of the cordons and their relation to other portions of the lazaret.

At present the bulk of the pilgrims are lodged in large houses or huts with matting walls and palm-thatched roofs. Such a house is known as an "*arish*." There has been considerable controversy as to the suitability of these houses for lodging pilgrims. There are two types of arish, the "old type" and the "new type." Both are built of a skeleton of wooden beams, rods, and canes, on which are nailed, inside and outside, squares of native matting (made of palm leaves), and, as stated, the roof is thatched with a thick layer of palm leaves. The new type differs from the old in having a thatched verandah on either side and in some other minor details; it is also better constructed than the old model. The Commission went very carefully into the question of cost and found that though a new model arish costs about £T.30 and an old model only about £T.15, the difference is compensated by the greater comfort which the former offers to the pilgrims, by its more presentable appearance, and by the fact that it lasts nearly twice as long. The external appearance of each of the two models is shown in Figs. 7 and 8.

FIG. 7.

An "arish," old model.

The floor of these houses is simply the desert sand of the island. Their length is 19 or 20 metres, their width about 5·30 metres, and their height in the middle from 4½ to 5 metres. In a tropical climate, such as that of Camaran, a house of this kind offers several advantages: it is cheap; it can be easily burnt and rebuilt at little cost in case of an epidemic; it offers sufficient protection against the sun; and it is thoroughly ventilated, the entire walls being of porous matting. On the other hand, it is difficult to disinfect; the walls harbour dust and dirt; spiders and rats infest the space between the inner and outer layers of matting; and when rain falls it is difficult to prevent the interior from becoming damp. In the case of two of the six cordons (the first and third) which lie almost at sea-level the houses are actually inundated after heavy rains. Rain is not very common at Camaran, but three or four times each winter there is likely to be a fall of some duration and severity, and on these occasions the pilgrims in the first and third camps are liable to suffer

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There can be no doubt that stone houses, such as exist at A n-Saad or at the Egyptian lazaret of Tor, are greatly preferable to these mat houses, but the expense of their con-r'uction is very great. It is reckoned that to furnish all the pilgrims at Camaran with stone houses would involve a total outlay of some £T.50,000 or £T.60,000. The Commission nevertheless recommends to the Turkish Government the desirability of building such houses and spreading the expense over a series of years; but it must be confessed that there is little likelihood of this recommendation being carried out.

In Fig. 9 the interior of a mat house is seen with pilgrims

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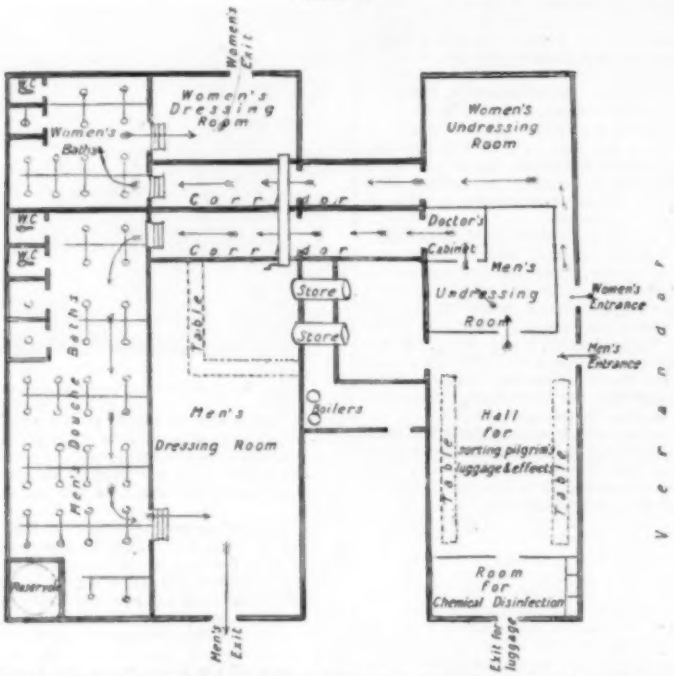


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movable flooring running along each side of the arish forming a kind of continuous camp-bed raised some two feet or so from the floor, but the Commission does not recommend this. It would only cause worse disorder than at present, it would diminish the air-space, and lead to accumulation of filth under the boards. To furnish all the houses at Camaran with such floorings would cost about £T.5000, and the Commission prefers to spend such a sum on more useful undertakings.

When the complete repair and "refection" of the Camaran lazaret were put in hand ten years ago the possibility of building "pucca" houses for the pilgrims instead of mat arishes was taken into consideration and a "specimen house" was run up in the fourth cordon. The exterior of this house is seen in Fig. 10. It has practically

FIG. 10.

"Specimen house" in the fourth cordon.

the same dimensions as an arish: the walls are of brick on an iron frame, the roof of Marseilles tiles resting on wooden beams and iron rods; the floor is of cement tiles. It must be confessed that this house is not the most appropriate in the special circumstances. The absence of verandahs on either side and of a ceiling in the interior makes the house extremely hot. A simple tile roof without a ceiling below is little suited for a tropical climate; the sun beats down on the tiles, which become intensely hot, and these radiate their heat to the interior.

The kind of house which the Commission recommends for pilgrims is one built of the stone of the neighbourhood. This is an excellent madreporic stone; it should have no layer of plaster, either outside or inside. A damp-proof course should be inserted near the base of the walls. The roof would be flat and constructed of what is known in these regions as "tap-tap." Roofs of this kind are the rule in native houses. They consist of wooden planks resting on stout wooden transverse beams; on the planks is laid firstly a layer of native matting; this is covered with a layer of clayey earth, then with a layer of shingle, and above all with a layer of lime plaster. The whole is well beaten down with an iron instrument during several days and it is the sound of this beating that gives to the whole the name of "tap-tap." Such a roof lasts for many years without repair; it is damp-proof and heat-proof (good eaves ventilation should, of course, be provided). Being flat it is easy by constructing a low parapet round and having an outer stair at one end to convert the roof of the house into a terrace, where the pilgrims can take the air and even sleep at night in the hot weather. In addition, the Commission recommends that the floor of such a house should be well raised on vaults, to permit of aeration underneath it, and that it should be formed of a smooth layer of cement, to facilitate cleanliness and disinfection.

In each cordon a "house of distinction" has been built, intended for better-class pilgrims. One of these houses is shown in Fig. 11. In that illustration two houses are seen and as a matter of fact three such "pucca" houses exist in every cordon. One of the three is usually in one corner of the cordon and is meant to be used as the "hospital"; the other two are usually side by side in another corner of the cordon and are intended to be used one as the medical man's house and the other as a "house of distinction" ("*maison de distinction*"), in which better-class pilgrims can be housed apart from the others. All three are nearly identical in construction, the only differences being that the "hospital" is divided into two rooms without a door of communication; the "doctor's house" has two rooms with such a door, and the "house of distinction" has no inner division at all. Further, the "hospital" is built on vaults and piers of brick, permitting of aeration under the floor, while in the other two buildings the floor-tiles rest on the sand. I shall have occasion in a later article to recur to this question of flooring.

The "house of distinction" and the medical man's house in each camp are indistinguishable from each other from the outside; they are also unpleasantly close to each other for the practitioner's comfort; and, moreover, the medical man's house, consisting of two large, bare rooms, without bath-room, latrine, or water-supply, is ill suited for its purpose. For this reason the Commission proposes to build a new smaller house for the medical man (to be referred to in a later article) and to convert the existing house into a second "house of distinction." Both houses require repair, and it is recommended to add a verandah to each and to improve the ventilation of both of them.

FIG. 11.

"House of distinction" and medical man's house in the first cordon.

A few pilgrims—especially those who arrive at Camaran in native sailing craft instead of by steamer—are lodged in tents. Considered as lodgings, a tent has all the disadvantages of an arish and others of its own. It offers no sufficient protection against the tropical sun and still less against tropical rains. The Commission does not recommend tents as a lodging for pilgrims.

*(To be continued.)*

## THE GERMAN SURGICAL CONGRESS.

(FROM OUR BERLIN CORRESPONDENT.)

THE German Surgical Association held its annual meeting in Berlin from April 3rd to 6th, Professor RIEDEL (Jena) being in the chair. After the inaugural business, of which a eulogy on the late Professor von Bergmann and the reading of the address to be presented by the association to its honorary member, Lord Lister, were the principal features, the proceedings began with a discussion on

*Wounds of the Heart.*

Professor REHN (Frankfort) said that wounds of the heart must be sutured and that it had been proved in many instances that the heart was not necessarily injured by operative interference. In the course of the application of the sutures it might be drawn out through an opening in the thorax, it might be fixed by a loop of ligature

[1] For this report we wish to tender our sincere thanks to the editor of the *Deutsche Medizinische Wochenschrift*, through whose courtesy it has been forwarded to us by our Berlin correspondent.

thread, or it might be seized by toothed forceps, and all this might be done without producing stoppage of the cardiac action, although in some cases the muscular substance quivered when the needle carrying the suture was inserted. The diagnosis of a wound of the heart was, as a rule, not very difficult to make; it might be inferred from the position of the entrance wound, from the direction of its track, and from the hæmorrhage. The diagnosis might even in some cases be ascertained by radiography. If the cardiac wound was not sutured death eventually occurred from compression of the heart by the hæmorrhage within the pericardial cavity, which could not contain more than from 150 to 200 cubic centimetres of blood without producing grave symptoms. Professor Rehn then explained that the filling of the pericardial cavity led to a compression of the atonic auricles, to an increase of the pressure in the veins, to anæmia of the coronary arteries and plethora in the coronary veins, and in this way to an increasing debility, and finally to stoppage of the cardiac action. The clinical symptoms were pain in the cardiac and epigastric regions, difficult respiration, cyanosis, pericardial friction, and an extension of the area of cardiac dulness. Needles impacted in the tissues might be drawn out, but knife-blades and daggers must be left in the wound until all arrangements were made for exposing the heart, because they tended to stop hæmorrhage by acting as an obstruction. The question whether an operation was indicated or not must be decided according to the circumstances of each individual case. Wounds of the heart might heal spontaneously, but the cicatrix had sometimes broken down afterwards. The operation must begin by an intercostal incision and resection of one or more ribs. If the pleura was not included in the original wound the surgeon should endeavour to preserve it intact. Hæmorrhage must be avoided as much as possible, but it often occurred after incision of the pericardium. Hæmorrhage could be stopped by drawing the heart out of the wound and compressing the vena cava inferior and even the auricles. It had been proved by experiments on animals that this might be continued for one and a half minutes without harm. The suture of the wound of the heart must be done with round needles and silk and not with catgut or wire. When cardiac failure was imminent the operation must be interrupted for some minutes.

Dr. SAUERBRUCH (Greifswald) said that he had made experiments on the influence of pneumothorax on wounds of the heart. He was of opinion that the hæmorrhage from the wound might cease, but that cardiac failure might ensue after a few minutes. He described several experiments showing that by means of his apparatus (some account of which was given in THE LANCET of May 7th, 1904, p. 1308), the lungs became inflated and the heart recovered; moreover, the pleura was less liable to become infected. He recommended that the heart should be sutured under a slightly reduced atmospheric pressure and that afterwards when the pleura was to be closed the pressure should be greatly reduced.

Dr. TIEMANN (Jena) showed a patient who had recovered after the right auricle and the right ventricle had been injured and the pleura opened by a needle penetrating through the fourth intercostal space.

Dr. GOBEL (Kiel) said that he had avoided pneumothorax by the application of Potain's apparatus; it might also be avoided by fixing the pericardium by sutures round the wound. He had proved experimentally that infarct, keloid, and even aneurysm of the heart might be caused by the sutures.

Dr. KÜMMELL (Hamburg) said that he had used direct massage of the heart in syncope occurring during general anæsthesia, after having made the heart accessible by a pericardial incision. Under massage of the heart the patient's lips again became red, the beating of the heart was renewed, and some respirations occurred, but all these phenomena soon ceased and death finally ensued.

### *Operations for Aneurysm.*

Professor LEXER (Königsberg) read a paper on ideal operations for aneurysm. He said that an operation might be called ideal when the sac of the aneurysm was successfully removed, the circulation in the vessels being at the same time preserved. He obtained an excellent result in a case of arterio-venous aneurysm of the popliteal vessels by resecting both vessels and joining the divided ends. The resection left a gap of five centimetres between the ends but this deficiency was supplied by means of a metallic appliance. Immediately after the operation the pulse could be felt in the posterior tibial artery; nine months later, however, the pulse was less distinct because the lumen of the artery was compressed by cicatrices, but no interference with the circulation had occurred. In another case of aneurysm of the subclavian artery a gap of seven centimetres existed after the resection which he tried to fill up by the implantation of a piece of the patient's saphenous vein. Circulation was at once restored, but after five days the patient became delirious and died. At the necropsy it was found that no thrombus was present within the implanted piece.

Dr. STICH (Breslau) said that he had made experiments on the transplantation of arteries and veins of one millimetre in diameter from one animal to another and had succeeded in obtaining complete union of the implanted piece without disturbance of the circulation. In a dog he had cut the renal vessels, ligatured the central ends, and joined the peripheral ends with the iliac vessels; the implantation succeeded and the kidney continued to secrete urine. When the dog was killed several months afterwards no important alterations in the implanted parts were found. In the same way he had implanted the thyroid artery and vein of a dog into the carotid artery.

### *Operations on the Lungs.*

Professor FRIEDRICH (Greifswald) said that the results of operations for tuberculous disease and actinomycosis of the lungs have been unsatisfactory but that they have improved in cases of echinococci and especially in gangrene. In acute cases of gangrene the prognosis was good but in chronic cases it was bad, especially when a resection of several ribs and of considerable parts of the lungs became necessary. The determination of the position of the gangrenous area was difficult though it was now facilitated to some extent by radiography; it was also difficult to decide whether adhesions of the pleura existed. Professor Friedrich recommended that the surgical intervention should be completed in one operation as soon as the existence of a circumscribed abscess in the lung had been ascertained. The lung was fixed by sutures after the resection of the ribs. He preferred to make the opening into the lung by cutting instruments rather than by means of the thermo-cautery, the hæmorrhage being stopped by ligatures. If the abscess was not found at once a provisional plugging was advisable as the pus was often discharged spontaneously after some time through the opening. The proportion of recoveries was about 70 per cent. in localised gangrene. The prognosis was unfavourable in the case of the abscesses of bronchiectasis because the patients were less resistant and the abscesses, as a rule, were multiple. With regard to operations for primary tumours of the lungs, the experience hitherto acquired was not sufficient to enable a definite opinion to be formed. In 78 cases of tumour of the thoracic walls extensive resections of the ribs were performed and 27 cases terminated fatally. In injuries of the lungs those complicated by profuse hæmorrhage might be operated on. With respect to the use of Dr. Sauerbruch's apparatus for reducing the atmospheric pressure, Professor Friedrich was of opinion that its advantages consisted (1) in the ease with which a view of the entire lung might be obtained through the incision and (2) in the possibility of resecting a rib in it without producing pneumothorax. Possibly in the future an exploratory thoracotomy would be as easy as an exploratory laparotomy was at present. It had, however, certain drawbacks, such as the high temperature within the chamber and the limited space, making it difficult for the surgeon and his assistant to move. General anæsthesia was necessary only at the beginning and at the end of the operation. The costal pleura was the most sensitive of the structures implicated, the pulmonary pleura was less sensitive, and the substance of the lungs, the pulmonary vessels and the distal parts of the bronchi were totally devoid of sensation. The maximum duration of operations performed in Dr. Sauerbruch's chamber was one and a half hours. The cyanosis as a rule increased. When pneumothorax occurred suddenly the pulse at once became irregular; the bending at the hilum of the lung made the respiration cease and the pulse disappear. Professor Friedrich recommended that ligatures should not be applied *en masse* in the resection of portions of the lungs but that the vessels and the bronchi should be isolated individually. The total resection of one lung was impossible because of the impossibility of tying the bronchus in a trustworthy way and of avoiding the occurrence of emphysema of the posterior mediastinum by a loosening of the ligature.

Dr. LENHARTZ (Hamburg) reported a lengthy series of cases of pneumotomy of which 85 were performed for gangrene, five for abscesses, 11 for bronchiectasis, and four for cancer. Recoveries followed in 53 of the cases of gangrene and in four of the cases of abscesses, the remainder terminating fatally. With respect to the diagnosis of cancer in the lungs, he said that four points should always be regarded—namely, the presence of cells showing fatty degeneration, which were characteristic; the evidence supplied by radiography; and the results of physical examination and exploratory puncture. He had operated on four cases out of 23, of which one was temporarily successful. All the operations were performed without Sauerbruch's chamber which he believed could be dispensed with. Pneumothorax might occur afterwards when the dressing was changed. He always operated in two stages, resecting the rib at the first operation and incising the lung at the second one. He drew attention to the fact that syncope and even death might occur at the moment when the pulmonary pleura was cauterised.

Professor KÖRTE (Berlin) confirmed the latter observation. As the result of 41 operations on the lungs which he had performed he had come to the conclusion that the diagnosis of these conditions was not easy. When there were multiple foci of disease the operation was often very difficult and the prognosis was bad. He said that nothing which he had heard in the discussion had convinced him of the utility of Sauerbruch's chamber.

The PRESIDENT asked whether the great hospitals and universities were under a moral obligation to purchase Sauerbruch's chamber, the price of which was still extremely high—namely, from 15,000 to 18,000 marks (from £750 to £900).

Professor FRIEDRICH in his reply repeated that the number of cases was still too small to allow of a definitive judgment being formed. Abscess and gangrene of the lungs might be operated on without Sauerbruch's chamber, for brilliant results had been obtained by Professor Lenhartz and Professor Garré without it.

Dr. SEIDEL (Dresden) recommended as an alternative to placing the walls of the lung under reduced atmospheric pressure that the bronchial system should be subjected to increased atmospheric pressure as already recommended by Professor Petersen; the pulse, the respiration, and the blood pressure were not altered in the circumstances.

Dr. SAUERBRUCH replied that the right ventricle and auricle were damaged by this method.

Professor KÜTTNER (Marburg) said that he had performed several operations under increased atmospheric pressure and that he was well satisfied with the results.

Professor SCHLANGE (Hanover) said that in severe hæmorrhage from a tuberculous lung he resected the third rib as quickly as possible under local anæsthesia. He then loosened the apex of the lung, drew it out of the wound, and plugged the cavity. The hæmorrhage was stopped by the plugging, but, of course, no influence was exerted on the progress of the tuberculous process.

Professor KAREWSKI (Berlin) read a paper on Actinomycosis of the Lungs. He said that he had operated on four cases, of which three had terminated fatally. In his opinion only primary actinomycosis of the lungs was suitable for operation while the disease was still in an early stage and the infected focus was removeable. Metastatic actinomycosis was not operable. An early diagnosis was essential before the thoracic walls were attacked by the disease. With regard to the difference between actinomycosis and tuberculous disease of the lungs, he pointed out that actinomycosis was especially liable to attack the lower lobes. Fibrinous discharge and especially the presence of actinomyces in the sputum suggested the diagnosis; radiography was also of some assistance.

Dr. MERTENS (Breslau) said that he had obtained a good result in a case of punctured wound of the lung with profuse hæmorrhage by resecting a rib and suturing the injured part with catgut sutures.

*(To be continued.)*

GRESHAM COLLEGE.—Four introductory lectures will be delivered on May 14th, 15th, 16th, and 17th by Dr. F. M. Sandwith, Gresham Professor of Medicine, at 6 P.M. The subjects are as follows: Lectures I. and II., "Sir Thomas Gresham and his Times"; Lecture III., Influenza; and Lecture IV., Cerebro-spinal Fever (Epidemic Cerebro-spinal Meningitis or Spotted Fever).

# THE MILK-SUPPLY OF LONDON: SOME PERSONAL OBSERVATIONS UPON ITS RAILWAY TRANSPORT.

(FROM A CORRESPONDENT.)

## III.[1]

*The Midland and London and South-Western Railways.—The Great Northern Railway.—The London and North-Western Railway.—The Great Eastern Railway.—The South-Eastern and Chatham Railway.—The London, Brighton and South Coast Railway.*

THE Midland Railway carries a very large quantity of milk to London, the greater part of which is brought from Derbyshire, North Staffordshire, Nottinghamshire, Bedfordshire, and Leicestershire. The milk brought into London by this railway is largely delivered to the suburban stations at Kentish Town, South Tottenham, Hendon, and Cricklewood; that reaching the terminus is delivered at Somers Town, the name given to that part of St. Pancras station used as a goods station. Here there is a special depôt for the unloading of milk and other perishable commodities. Two special milk trains are run by this company, one of which arrives by night and the other at noontime. These trains are made up on an average of 20 vans, each of which will contain about 50 cans of milk, although the usual load is about 30 cans. The milk vans are almost all of one pattern and are of comparatively recent construction. They are well ventilated and the ventilating interstices are covered on the inside by gauze wire to exclude dust and dirt. The great bulk of the milk conveyed to London by the Midland Railway comes by the special milk trains, but milk vans are attached occasionally to passenger trains and small quantities of milk are carried in the guard's vans of passenger trains.

The London and South-Western Railway conveys much milk to London, chiefly from Somersetshire and Dorsetshire. This company runs special milk trains which arrive by night and in the morning, and these are unloaded at Waterloo and Vauxhall stations. Many of the vans are specially constructed for carrying milk, roomy, and efficiently ventilated, but some are old passenger train guard's vans which by their external appearance do not strike an observer as particularly well adapted for the purpose to which they have been put. The London and South-Western Railway carries the bulk of the milk conveyed on its system into London itself into Vauxhall station. 1500 cans daily come into Vauxhall station, chiefly carried by special milk trains, two of which come in during the morning and three by night. A considerable amount of milk is also conveyed by special vans attached to ordinary trains and by the guard's vans of ordinary trains. A great deal of the milk brought into Vauxhall station is transferred to Battersea and Chelsea, and to some other points, while a goodly portion of the milk brought into the London district by the London and South-Western Railway is deposited on the way at suburban stations, as Wimbledon, Surbiton, and Clapham Junction. The milk traffic on the London and South-Western system has greatly increased during the past few years.

To the main terminus of the Great Northern Railway at King's Cross a large quantity of milk is brought daily, though not so much as to Paddington. The greater part of the milk comes from Derbyshire and North Staffordshire, so that most of it has to travel a greater distance than is the case with the bulk of the milk brought into London by the Great Western Railway. Still, the distances traversed are not very great, for the farthest point from which milk is transported to the metropolis by the Great Northern Railway is between 140 and 150 miles. In the course of 24 hours two special milk trains are run at a rapid rate, which arrive in London during the early morning. One of these trains leaves Stafford at 6.40 P.M., picks up milk *en route*, and gets into King's Cross at 1.36 A.M., occupying about seven hours on the journey, the other is not quite so rapid. These trains account for the greater part of the milk carried by this company, although a certain amount is transported in the vans of passenger trains, but much of the milk brought into London by the Great Northern Railway is deposited at Finsbury Park and other outlying stations, whence it is distributed

[1] Nos. I. and II. were published in THE LANCET of April 20th (p. 1116) and 27th (p. 1189), 1907, respectively.

to suburban districts. When the milk is unloaded at a suburban station it is deposited upon, as a rule, much cleaner premises, but at King's Cross, as at Paddington, the milk in the special trains is unloaded at a milk wharf, constructed especially for the purpose. I watched the arrival of two of the Great Northern milk trains. Although the sole purpose of these trains was the conveyance of milk, some of the vans used were the ordinary vans employed for passengers' luggage, though more were the North Staffordshire Railway milk vans. These are constructed on a similar plan to the milk vans of the Great Western Railway, with open boarded sides. Some of these vans were of a type recently introduced. They were long vans divided into two compartments, each of which can carry 40 milk cans, and the methods of ventilation seemed to be fairly effective. I observed on the Great Northern milk wharf that many of the cans containing milk had their lids partly open and the surface of the milk was in one case filthy.

The London and North-Western Railway carries a certain amount of milk to London from very remote districts, but the greater part of the milk brought into London by this line comes from localities lying within an easy journey, Buckinghamshire and Hertfordshire being chiefly drawn upon. The bulk of the milk which comes to Euston Station, like that which reaches Paddington, is conveyed by special milk trains arriving by night and in the morning. The vans used for the transport of milk by this company vary considerably both in size and in construction. There are now in use on the London and North-Western system corridor trains for the carriage of milk, the vans of which have efficient ventilation; indeed, the corridor scheme of construction possesses many advantages for the transport of milk. I saw one of these new corridor trains; it was made up of a somewhat novel type of milk van 50 feet in length, 8 feet in width, and 7 feet 10 inches high in the centre. For cooling and ventilating this van 12 torpedo ventilators are placed in the roof to extract the air and at a height of five feet from the floor level are louvred ventilators, protected by perforated zinc, to keep out the dust. The floor is covered with sheet lead, and the sides to a height of three feet are sheathed with stout zinc sheets. The chief and distinctive feature of such vans, however, is that they can be operated singly or may be coupled together to form a train, for which purpose they are provided with gangways, and in order to minimise delay at stations a truck is provided in each van so that the milk can be sorted *en route*. The advantages claimed for corridor milk trains over ordinary milk trains are the greater facility with which milk can be sorted *en route* and the better means which they provide for loading and unloading. I watched the incoming of an ordinary milk train at this station. It arrived at Euston at 11.45 A.M. This train consisted of ten vans of different types of construction. One of these was a long van built in two compartments, resembling externally the two-compartment vans in use on the Great Northern Railway, the capacity of the vans being about the same. Four vans were close boarded, two were lofty vans with side ventilation, and two were ordinary passenger guard's vans. This train came from Gloucestershire and Worcestershire, picking up milk on the way; and judging from the labels on the vans some of the milk had come from a considerable distance, much farther than made the use of passenger guard's vans prudent. It is possible that in the summer heat a better arrangement is made. A considerable quantity of milk is obviously brought into London by the London and North-Western Railway in the vans of passenger trains. I witnessed the arrival of trains from long distances, from the luggage vans of which cans containing milk were put out—20 cans were put out from a Fleetwood train, for example. It does not follow that the milk had been carried from Lancashire to London—indeed, it is more likely that it had been collected *en route*. But this would imply a stopping train, which is equivalent for the purposes of milk transport, when one of the essentials is economy of time, to a long journey. It does not matter much whether milk has been carried 60 miles or 120 miles if in each case the same time is occupied on the journey. I also saw a passenger train arrive at Euston from Nuneaton at about 11.30 A.M., from the guard's van of which cans containing milk were unloaded. This sort of thing I saw on each of several visits paid to Euston Station recently, where there is also a large quantity of cans containing milk standing on certain of the passenger platforms. I must repeat monotonously that the lids of some of these cans are invariably partially open. At Euston, as at Paddington, on more than one occasion I have seen milk poured from one can to another can on the platform. If this is a daily routine the reasons for the dangerous process ought to be removed by proper coöperation on the part of consigner, consignee, and railway company; it is little short of disgusting that on the platform of a railway station, where dust and dirt are notoriously abundant, the staple food of children and invalids—a food which is obviously susceptible to rapid deterioration—should be decanted from receptacle to receptacle. Possibly a comparatively small quantity of milk is thus treated, but the toleration of such a practice shows that some of those commercially interested in the transport of milk have yet to learn the alphabet of scientific cleanliness.

The Great Eastern Railway conveys milk to London from Norfolk, Suffolk, Essex, Lincolnshire, Hertfordshire, and Cambridgeshire. It is carried in special milk vans attached to ordinary passenger trains. The milk vans which I saw at Liverpool-street Station had a capacity of about 70 cans, the average contents of each can being about 16 imperial gallons. I was informed that ten milk vans or thereabouts enter Liverpool-street Station during the 24 hours, which would make 11,000 imperial gallons in the course of a day. The farthest distance from which milk is brought to London by this line is not much more than 100 miles, and the average time taken by the milk vans on the journey is four hours. Sometimes one van is attached and sometimes two vans are attached to a train. Milk is collected *en route* in varying quantities. It appeared to me from my brief inspection that the milk traffic on the Great Eastern Railway was well managed. Of course, the volume dealt with is small compared with that manipulated by some of the other railway companies, but all that I saw impressed me favourably. The milk vans were well constructed and efficiently ventilated, and considering the shortness of the journey from the eastern counties to London there should be little fear, so far as the railway transport is concerned, that the milk would not arrive in good condition. I understand that consigners of milk by the Great Eastern Railway are generally well satisfied with its methods of transport; the only disagreement which has arisen between dairy farmers sending milk by this route and the railway company has been as to the rates for carriage. However, this has been, and is still, more or less a bone of contention between all the railway companies and consigners of milk, and from what I heard I could not see that there were any especial grounds for the complaints of the farmers of the eastern counties.

The South-Eastern and Chatham Railway carries milk into London Bridge, Charing Cross, and Victoria stations, milk being also put off at Woolwich, Dartford, and New Cross. Practically all the milk conveyed by this company is carried by passenger trains, but the amount brought in is small as compared with the other important railways. The milk conveyed to London and the suburbs by this line is, for the most part, sent in small consignments and comes, of course, principally from Kent, Surrey, and Sussex. The greater part of the milk carried into London itself by this route comes to London Bridge Station, but the whole amount thus transported is not large. That conveyed into the South-Eastern and Chatham Railway station at Victoria is small in quantity, but in the summer a considerable amount of milk, from 90 to 100 cans daily, is despatched from this station by passenger trains to seaside resorts.

At the present time a very insignificant quantity of milk is brought into Charing Cross Station. Since the accident to the roof of this station some 18 months ago the milk traffic has declined greatly, but a large quantity of milk is carried to Woolwich and Dartford. The suburban milk traffic of this line is far larger than the metropolitan.

The London, Brighton, and South Coast Railway conveys milk from different parts of Sussex into London and the suburbs in special milk vans and in the guard's vans of passenger trains. The large consignments are carried in special vans and the small consignments are frequently carried in the guard's vans of passenger trains. This line, though deriving its milk traffic almost entirely from Sussex, also carries a certain amount of milk from adjacent districts in Kent and Surrey. Almost the whole of the milk conveyed to the London district by the London, Brighton, and South Coast Railway is left at suburban stations situated between Croydon and Sutton. A relatively large amount of milk is deposited at Croydon itself. The time taken by trains travelling by this route carrying milk to reach London

and the suburbs is not, as a rule, longer than one and a half hours.

In some respects the conditions in regard to milk transport by the South-Eastern and Chatham Railway and by the London, Brighton, and South Coast Railway are similar. Both lines carry milk into London and the suburbs from comparatively short distances and both deposit the greater part of their milk cargo at suburban stations. Passenger trains are employed by both lines to transport milk, more so by the South-Eastern and Chatham Railway than by the London, Brighton, and South Coast Railway. The milk cans are unlocked and unsealed, which doubles the risk of carrying the fluid in the guard's van of a passenger train.

*(To be continued.)*

## MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

### *St. John Ambulance Work.*

THE annual competition in connexion with the North Western District Nursing Division of the St. John Ambulance Association took place at Blackpool on May 4th. This very useful association covers a wide area, as shown by the sections examined coming from Liverpool, Rochdale, Lytham, Preston, Accrington, Bolton, Castleton, Brierfield, Bury, Crompton, Barrowford, Oldham, and Nelson. The trophy offered was a silver shield which was presented to the association in 1902, in which year and also in 1903 it was won by Blackpool. Since then it has been won by Lytham, Rochdale, and Blackpool in chronological order. Winning in 1906 Blackpool did not compete this year, when Brierfield came out first, Lytham second, and Nelson third. The examiners and judges were Dr. J. W. Johnstone of Bolton and Dr. J. Broomhead of Haslingden. It is difficult to estimate the good that is done in this way; we may be sure, however, that it is not limited to the winning teams but that a leaven of sanitary growth is working far and wide through the manufacturing districts of Lancashire where it is so much needed.

### *Royal Albert Asylum, Lancaster.*

It is now more than 40 years since the Royal Albert Asylum at Lancaster was opened for the treatment of all improvable grades of the feeble-minded in the northern counties of England. It was established, and is chiefly maintained, by public subscription and there is now accommodation for 700 inmates. At present there are about 650 patients and the election for this year's applicants will take place at the County Hall, Carlisle, on Wednesday next. The objects and methods of the institution will be explained and specimens of work done by the patients will be exhibited. For the 50 vacancies there are 83 candidates—a fact which shows not only the great need that there is for such an institution but also the confidence of the public in intrusting those whose mental strength is feeble to the judicious and kindly training given at the asylum. The committee appeals for donations and subscriptions, as a large addition to the annual income is needed if full advantage is to be taken of the existing accommodation. Of the present inmates 269 belong to Lancashire, 72 of them coming from the Manchester and Salford district. In connexion with this forthcoming election a meeting of the Manchester local committee and the members of the Manchester and Salford District Ladies' Association was held in the Memorial Hall on April 30th. The secretary, Mr. Keir, said that the district was still deeply indebted to the institution for the maintenance and training of the patients whom it sent. The returns of the District Ladies' Association, though not yet complete, compared favourably with those of last year and a substantial increase in the amount collected was anticipated. On behalf of the central committee Mr. Keir thanked the members of the local committee for their services. It is to be hoped that the efforts made will take away the reproach that the Manchester district does not provide sufficiently for the patients whom it is so glad to safeguard in the asylum.

### *University of Manchester.*

Interesting developments are taking place in the University of Manchester. One of them is perhaps only indirectly connected with medicine but is interesting on its own account. It has been decided to appoint lecturers in economic zoology and economic botany. They will investigate the life-history of animal and vegetable pests and will inquire into definite instances of damage done by pests which are brought to the notice of the University by local authorities, by farmers, or others. This branch of work is in many respects analogous to that carried on in the field of bacteriological research by the public health department of the University under Professor S. Delépine. Lectures on their subjects will be given in the University by the new members of the staff. Improved facilities for teaching experimental psychology are also receiving consideration by the University authorities, and indeed the appointment of a teacher in this subject is only awaiting the possession of sufficient means. It is thought that this appointment will have an important influence on the investigation of mental and nervous diseases and likewise on the study of the conditions of school life and the mental development of children.

### *Manchester Jewish Hospital.*

The board of the Manchester Jewish Hospital has appointed Dr. Julius Dreschfeld and Dr. Judson Bury as honorary consulting physicians.

### *Pulmonary Tuberculosis at Rochdale.*

During the last half century the deaths from pulmonary tuberculosis at Rochdale have fallen to 1·32 per 1000, being 2·33 per cent. lower than the rate at the beginning of the period. This reduction is something to be thankful for but not to rest satisfied with.

### *Manchester Royal Eye Hospital.*

The Manchester Eye Hospital is to be enlarged at an estimated cost of £23,000. 50 more beds for patients will be provided, making a total of 160, a number expected to meet all requirements for a long time to come. The old hospital in John-street is retained for out-patients, and the two out-patients' departments treat about 30,000 cases annually.

### *Lead and Soda-water.*

An inquest was held on April 30th on the body of the wife of a Manchester fruiterer. She had been ailing for some time and had suffered some pain. To relieve this she took several draughts of soda-water from the soda-water fountain in the shop, but as she grew worse Dr. Saul and Dr. Helm were called in and advised her removal to the Northern Hospital, where she died. Dr. Helm said that the cause of death was lead poisoning, and on analysing a sample of water from the fountain he found that it contained seven grains of lead per gallon, absorbed from the lead piping attached to the machine. The verdict was "Death from lead poisoning" and the jury recommended the inspection of all the machines of the kind in the city. It would have been quite justifiable if they could have ordered the destruction of all such machines. The knowledge of the very easy contamination of water by lead is now so general that it is scarcely possible to imagine the manufacturers of these dangerous fountains having preserved their ignorance of this fact intact, more especially in regard to water charged with carbonic acid. It becomes, therefore, a question as to their position legally and morally when they turn out for public use these fountains for distributing lead and soda-water.

May 7th.

## WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

### *Cardiff Port Sanitary Authority.*

ALTHOUGH at the time of its establishment the Cardiff and County Public Health Laboratory was criticised as involving an unnecessary and useless expenditure of public funds, every year the advantages of such an institution are more apparent. Nowhere are these more clearly shown than in the work done in the laboratory for the port sanitary authority. On several occasions, though happily the necessity did not arise in 1906, the diagnosis of plague has been speedily verified, so that justification has been found for the subsequent drastic measures which have prevented any spread of the disease. This ability to deal speedily and successfully with such a disease as plague must give a sense of security to all those who are engaged in the shipping business of the port and it is beginning to be realised that the expenses connected with the administration

of the port sanitary authority are a form of insurance against the losses—and they might assume large proportions—which would follow the almost certain neglect of the port by ship-owners should an outbreak of infectious disease become unmanageable. The reputation which the Cardiff Port Sanitary Authority is justly earning for dealing promptly and successfully with any such outbreak ought to be reckoned among the assets of the town. In 1906 the assistance rendered to the port sanitary authority by the public health laboratory appears to have been confined to the bacteriological examination of samples of drinking water taken from vessels entering the port. Altogether 90 such samples were examined and of this number seven were stated to be very impure, 48 impure, 24 fair, and 11 good. Of the 12 samples examined during October all but two were found to be either impure or very impure.

*Typhoid Fever in Swansea Rural District.*

At the last meeting of the West of England and South Wales Branch of the Incorporated Society of Medical Officers of Health an interesting account was given of the recent outbreak of typhoid fever at Gorseinon in the Swansea rural district by Dr. William Williams, medical officer of health of the Glamorgan county council; Dr. Trafford Mitchell, one of the medical officers of health of the rural district; and Dr. H. A. Schölberg, the bacteriologist to the Cardiff and County Public Health Laboratory. The epidemic was thus dealt with from more than one point of view. Gorseinon is a scattered industrial district where the insanitary conditions too often found in such areas are in evidence. The outbreak started in September, 1906, with two cases, each of which, though doubtful clinically, gave positive Widal reactions. Then followed a group of five cases around a contaminated well, all of the patients affected being relatives of the first case. A systematic examination of all cases of pyrexia was then instituted, with the result that several ambulatory cases were discovered. Family relationship was evident in every group. In every family tested for the Widal reaction there were positive results in one or more instances. The ambulatory character of the epidemic is evidenced by the fact that 62 of the 100 cases were diagnosed in the consulting-room. The blood of many "contacts" was examined, but a positive reaction resulted only where clinical symptoms were present. Personal infection appeared to be a considerable factor in causing the spread of the disease. Two medical officers who were engaged in coping with the epidemic developed the disease in its ambulatory form. There was some evidence in favour of the disease being spread by means of the public elementary schools and they were accordingly closed for a period. The water-supply was derived from 20 wells, only one of which was found to be contaminated.

*A Proposed County Medical Officer of Health of Monmouthshire.*

In recent reports upon the condition of certain sanitary districts of Monmouthshire medical inspectors of the Local Government Board have recommended the grouping of districts for the purpose of appointing a whole-time medical officer of health. These recommendations have led the county council again to consider the desirability of appointing a medical officer of health for the county. There is no doubt that this official ought to have been appointed years ago. There is ample work for him to do in the rapidly increasing colliery districts of the county.

*The Meat-supply of Plymouth.*

At a recent meeting of the Western Counties branch of the Veterinary Surgeons' Association held at Plymouth remarks were made on the alleged insufficient inspection by the local authorities of the meat-supply, in consequence of which carcasses were brought into the "Three Towns" in a diseased condition and animals unfit for human food were slaughtered in the private abattoirs and sold at the small shops. A considerable discussion arose over the matter in the local press. A meeting of the Plymouth markets committee of the town council was held to consider the subject and it decided to ask the Veterinary Surgeons' Association to give instances of diseased meat having been brought into Plymouth or of diseased animals having been slaughtered in the town and exposed for sale. The association in its reply stated that the allegations made were not meant specifically to apply to Plymouth but generally, because the members of the association had it within their knowledge that such things did occur in large cities. The markets committee felt that the reply was not satisfactory and decided that inquiries should be carried further; it also determined that the whole matter should be referred to the medical officer of health who will report the result of his investigations.

*The Royal Mineral Water Hospital, Bath.*

The annual meeting of the governors of the Royal Mineral Water Hospital, Bath, was held on May 1st, under the presidency of the Rev. H. Winwood. The medical report stated that 1185 in-patients had been admitted during 1906, compared with 1161 in 1905. The average daily number of occupied beds was 145. The financial statement showed that the ordinary income amounted to £4881, while the ordinary expenditure was £5095, leaving an unfavourable balance of £214. Colonel M. Ricketts was elected president for the ensuing year.

May 6th.

## SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

*Extension of the Glasgow Samaritan Hospital.*

LAST week Lady Blythswood opened the new wing and extension just completed of the Glasgow Samaritan Hospital for Women. The new wing contains four large wards with accommodation for ten beds each and four smaller wards with accommodation for three and two beds each, two large convalescent rooms, and two well-equipped operating theatres. The administrative block between the old and new wings has also been entirely remodelled. The cost of building and furnishing the new wing, together with other additions and alterations, amounts to over £12,000, while the total cost of the whole hospital buildings, including nurses' home and dispensary, has been about £40,000.

*Report of the Glasgow Hospital for Skin Diseases.*

The annual report of this institution shows that during the past year 1742 new cases were treated at the hospital, making 61,496 since its foundation in 1861, while 103 of the more serious affections were admitted to the wards of the Western Infirmary which are in connexion with the hospital.

*Greenock Meat Inspection Inquiry.*

On account of dissatisfaction expressed as regards the methods employed in dealing with the carcasses of animals slaughtered at Greenock the Local Government Board several weeks ago instituted an inquiry into the procedure in use in the slaughter-house there. Dr. F. Dittmar in his report states that there are evidences of great slackness having been permitted for years past in the system of meat inspection. The report covers a period of ten years, and after going into the statistics of carcasses condemned during that time he points out that as compared with Glasgow the percentage of condemned carcasses is too large. He also holds that the tripery and the digestor at the slaughter-house, together with the feeding of the animals, should be in the hands of the corporation and not of private individuals. It is also suggested that a veterinary surgeon should be appointed to give his whole time to the work, as well as two meat inspectors and a cleaner.

*The Northern Infirmary, Inverness.*

The annual meeting of the managers of the Northern Infirmary, Inverness, has just been held, ex-Provost McBean presiding. Mr. Duncan Shaw, W.S., honorary secretary, gave in the annual report. The installation of the electric light has now been completed and it is hoped that the apparatus for electrical treatment will soon be placed in the infirmary. A new water-supply has been introduced into the convalescent home at Bona. Reference was made to the lamented death of the Rev. Dr. Black, who was a manager for a long number of years, and of Mr. Charles Marshall Brown, the honorary secretary. Considerable discussion took place with regard to the admission of patients suffering from pulmonary tuberculosis into the infirmary, and ultimately a motion was carried to the effect that the present arrangement as to the admission of such patients should be continued for one year from this date, but in view of the fact that pulmonary tuberculosis is now an infectious disease by order of the Local Government Board and that provision had to be made by local authorities for such cases, the infirmary will not continue to accept such

patients after that date. The financial report for the past year stated that the ordinary revenue for the year amounted to £2294 and the ordinary expenditure to £3663 showing a deficiency of £1369 as compared with an adverse balance of £1166 in 1905. The legacies also showed a considerable decrease on previous years. The net results of the year's working, after applying the legacies to current requirements, showed that the accumulated funds of the institution had been still further reduced by a sum of £1085. The finance committee suggested that the managers might remit to it and the new honorary treasurer when he was appointed, with full powers to carry into effect an arrangement for the collection of subscriptions. The daily number of inmates, including patients and attendants, was 91·8 for 1905 and 89·6 for 1906; patients only, 57·8 for 1905 and 57·6 for 1906. The average duration of treatment of patients in 1906 was 29·3 days, as compared with 30·2 days in 1905. The report was adopted and the managers and committees were appointed.

*Scottish Trades Congress: Death Certificates.*

At the above congress recently held in Aberdeen the following motion was carried:—

To instruct the parliamentary committee to press forward legislation to provide that all societies, whether trade union, friendly, or industrial, who pay funeral allowances shall be placed upon an equal footing as regards fees for obtaining certificates of death of members.

The summer session of the University of Aberdeen opened on April 30th.

May 7th.

## IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

*University of Dublin.*

AT a meeting of the Senate of the University of Dublin held on May 3rd a grace was passed offering the degree of LL.D. *honoris causâ* to the Colonial Premiers at present in England.—A certain gloom has been cast over Trinity College by the death of Dr. John Kells Ingram, some time Senior Fellow and in 1898 Vice-Provost of the College, one of the most distinguished scholars of the University of Dublin during its brilliant Victorian era. When he was an undergraduate he wrote a poem, entitled "The Memory of the Dead," better known now as "Who Fears to Speak of Ninety-Eight?" The modern Nationalists have adopted it as their anthem but Dr. Ingram, I believe, never expressed any sympathy with their aims. He died at his private residence in Mount-street on May 1st.

*The Rotunda Hospital.*

A charter meeting of the board of governors of the Rotunda Hospital was held on May 3rd, General the Right Hon. Lord Grenfell, G.C.B., being in the chair. After the usual routine business was completed Mr. John William Bell was, on the nomination of the master, unanimously appointed as assistant to the master in the room of Dr. Guy Theodore Wrench, resigned.

*The International Exhibition.*

The International Exhibition in Ireland was formally opened by the Lord Lieutenant and Countess of Aberdeen on May 4th. They drove in state through the streets of Dublin and were received with cheers. Lord Aberdeen addressed the assemblage at the exhibition and read a gracious telegram from the King wishing success to the venture. On Monday, May 6th, the Marchioness of Ormonde received the officers of the *Britannia*, one of the splendid battleships in the bay, at the hall of the exhibition and presented them with a beautifully engraved ship's bell and many silver ornaments for their mess.

*The Health of Belfast.*

At a meeting of the city council held on May 1st it was reported that for the four weeks ended the 13th ult. the death-rate in Belfast from all causes was 23·2 per 1000. There is a diminution in the number of the ordinary infectious diseases but, on the other hand, cerebro-spinal meningitis still continues, the numbers being practically the same as last month —100 as against 104—and the death-rate from zymotic diseases —1·6—is higher than in the previous month. On May 2nd, at a meeting of the public health committee, it was reported that 20 cases of cerebro-spinal fever had been notified during the week as compared with 36 in the previous week. The death-rate for the week ended April 28th was 23·9 per 1000. Of late several cases of cerebro-spinal fever have occurred among adults.

*The Belfast Health Commission.*

The Health Commission has sat continuously from April 25th to May 3rd investigating the question of the purity of the water-supply. Professor E. A. Letts (who objects to the Stoneyford and Woodburn water on chemical grounds), Dr. R. Alexander and Dr. D. P. Gaussen (who are the dispensary medical officers of the Stoneyford area and who showed its liability to pollution), Mr. F. McCullough (engineer), and Mr. R. Hamerton (secretary of the water commissioners), as well as Professor P. Frankland, Dr. A. C. Houston, and Dr. M. H. Gordon, who gave evidence on behalf of the water trust, and Mr. Sweeny, an engineer, who thought the water from Stoneyford and Woodburn was not above suspicion, were all examined. The Commissioners have also visited the catchment areas. On May 14th the commission, which is doing its work thoroughly, will again sit in Belfast to hear evidence as to the sanitary state of that city. At the last monthly meeting of the city council (May 1st) reference was made by some of the members to the cost of the health commission, but—and largely, it would appear, owing to the action of the Public Health Committee—the citizens are saddled with the fees of a King's counsel who sits beside the chairman of the Public Health Committee at the sittings of the Commission. The reforming party in the Belfast corporation—who are steadily increasing—have protested very strongly against this expenditure in legal fees.

*Cerebro-spinal Fever in Belfast: Dr. M. H. Gordon's Views.*

At the sitting of the Belfast Health Commission on April 30th Dr. M. H. Gordon, who has for some time been retained by the Local Government Board (English) to investigate the problems presented by the etiology and treatment of cerebro-spinal fever, gave some remarkable evidence. After alluding to the report which has been issued by his Board on the subject of the meningococcus, and to the bacteriological evidence obtained in America and Germany showing the main cause of the disease to be the micrococcus of Weichselbaum, he stated his view that the people most liable to carry the organism of the disease, and so to infect others, are those who have been in contact with the infected but are themselves well. This view was somewhat modified by a further statement that these mediums for infection might exhibit a mild meningitis, while they are capable of handing the organism over to others who are less resistant, especially children, and so to spread the disease. In Germany it was found, he said, that 10 per cent. of "normal" people in contact with the disease showed what was identified as the meningococcus in their respiratory passages, and in the same epidemic 20 per cent. of the affected showed organisms in the same locality. It was found during the first few days that some 50 per cent. of the patients presented signs of the meningococci in the upper respiratory passages. As these facts have not been noticed by our medical authorities Dr. Gordon suggested that it was necessary in the case of Belfast to have the services of a bacteriologist to devote himself to the question of cerebro-spinal meningitis, so that detailed knowledge might be obtained for purposes of prevention. He pointed out that if the German observations were accurate the isolation of "normal" contacts would have to be made compulsory for the good of the community, and with the example of the methods adopted in the case of diphtheria before him he saw no great difficulty in such a scheme. He rightly declined to assert dogmatically that contacts in cerebro-spinal meningitis should be segregated for any particular period of time, on which question he said that he should prefer to consult Professor W. Osler who was one of the committee which investigated a recent and appalling outbreak of cerebro-spinal meningitis in New York. After mentioning the possibility that without bacteriological investigation the mild respiratory symptoms sometimes present in those whom he termed the "normal" contacts in regard to cerebro-spinal meningitis might be confused with the symptoms of pneumonia—a fact which pointed again to the necessity of systematic bacteriological investigation of all notified cases of cerebro-spinal meningitis—Dr. Gordon, in a properly guarded way, mentioned some investigations, not yet complete, by means of which epidemics of cerebro-spinal meningitis might be prevented. He informed the Belfast Health Commission that the methods to which he alluded, which are at present of a confidential nature, are on the lines adopted when using

preventive prophylactics for plague, cholera, and typhoid fever, and added that the few experiments so far made showed the treatment to be harmless and promising. It is only fair to say that the bacteriologists who in Belfast are making most careful investigations of cerebro-spinal fever do not accept Dr. Gordon's views on many points and are sceptical—from their work—of any preventive vaccine or serum being discovered. They have worked direct from the cases and not from any borrowed strains of the meningococcus. The serum sent from Germany has been shown to be useless both clinically and by laboratory experiments, and, what is still more peculiar, the blood from cases of cerebro-spinal meningitis in London does not react to the meningococcus present in the Belfast epidemic; and the cases seen in Belfast are, many of them, clinically quite different from those which under the term posterior basic meningitis or cervical opisthotonos of infants were supposed to be endemic examples of the disease. It will be interesting to note whether the meningococcus of such cases will react to the meningococcus present in the Belfast epidemic. This, of course, goes to suggest that the coccus on which Dr. Gordon bases his observations is not the meningococcus present in the Belfast epidemic.

May 7th.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

### *The Work of Port Sanitary Authorities.*

M. Clémenceau, Minister of the Interior, has recently obtained the signing of a decree by which the rights and duties of port sanitary authorities with respect to vessels arriving in a port are defined. In future every vessel arriving in a port of France or of Algeria must be visited by an officer of the sanitary authority before communicating with the shore, and if such officer has reason to suppose that there is a case of doubtful or febrile illness on board a visit must also be made by a medical officer, who will decide whether the illness is, or is not, one of those contemplated by Article 4 of the law of Feb. 15th, 1902, relative to the protection of the public health. When the medical officer has decided that the illness is of the former class it will be his duty to see that the regulations of the port sanitary authority are carried out with respect both to the vessel and to the persons on board; he will also invite the municipality in coöperation with the crew to remove the patients to the isolation hospital, and in carrying out the measures prescribed either by the law of 1902 or by the local sanitary regulations he may have recourse to the services connected either with the municipality or the department so far as one or other of them is respectively concerned.

### *Compressed-Air Illness.*

At a meeting of the Medico-Chirurgical Society held on April 8th M. Berruyer gave an account of cases of compressed-air illness which had occurred among the men employed in various works in Paris since October, 1905. He explained that there was a material difference between the ill-effects experienced by divers (*scaphandriers, plongeurs*) and by *tubistes* or men engaged in subaqueous work, such as the foundations of bridges. This difference depended on the fact that divers descended to greater depths than were required for subaqueous constructional work, and further, that the conditions of diving were quite unlike those in which the *tubistes* passed into and out of the air-locks (*l'écluzage et le déscluzage*). The illness affecting the *tubistes* was known also as caisson disease. It rarely occurred while the men were in the compressed air chambers but showed itself for the most part either during decompression or a few hours afterwards and had a direct relation to the rapidity of decompression, the duration of which ought not to be less than three minutes per atmosphere of extra pressure. The most usual symptoms were violent pains in the limbs, particularly in the lower limbs, sometimes accompanied by temporary paraplegia. M. Berruyer did not observe any instance of aphasia or word deafness or any indication of a cerebral lesion. Disorders of the gastro-intestinal tract, such as vomiting and obstinate constipation, were not infrequent. The respiratory organs might also be involved and cardiac arrhythmia, a symptom not previously recorded, had been observed on several occasions. The illness did not in general exceed 10 or 20 days and none of the cases terminated in death or permanent disablement.

### *Sad Death of a Medical Man.*

Dr. Rabuel, a young medical man practising in Paris, has just died in extremely sad circumstances. Having under his care two patients, a woman and her son, suffering from diphtheria, and both of them dangerously ill, he applied his mouth to that of the child and used forcible suction for the purpose of removing false membrane which was choking the patient. He then employed the same means for the relief of the mother. The condition of both patients improved almost immediately, but two days afterwards the unfortunate medical man had to take to his bed and he died from diphtheria in a few hours. He was married two years ago.

### *The Campaign against Tuberculosis.*

M. Albert Robin delivered a lecture on April 23rd at the Academy of Medicine on a very important and comprehensive scheme for the suppression of tuberculosis and the economic measures by which he has been trying to carry it out. His method is in opposition to the costly and incomplete sanatorium system which swallows up such large sums of money and can only effect the very hypothetical cure of a small number of tuberculous patients, and consists of a set of measures to which he has given practical trial in the anti-tuberculous department that he has established at the Beaujon Hospital; these are free consultations restricted to indigent persons, the distribution of medicines and clothing, educating tuberculous patients and their relatives, attending to the hygienic conditions of their homes and surroundings, sending early cases to the country, securing the admission to the Angicourt Sanatorium of cases likely to be benefited by treatment there, and giving medical and other aid to its patients after their discharge. It also provides for coöperation with different charitable associations of the tuberculous patients of which the department takes charge and which in return help the patients of the department in their several ways. This comprehensive plan has proved practicable without either establishing any new organisation or costing the public funds anything, owing to the great support which it has received from its well-wishers, and it has reduced the cost of effectively treating a tuberculous patient and looking after his surroundings to 7 francs 27 centimes[1] per head per annum, whilst the treatment of a single patient in the sanatorium varies in cost between 4 francs and 5 francs 90 centimes per day. The general adoption of this system in the Paris hospitals would admit of the treatment of 30,000 tuberculous patients a year in this manner and would need at the outside figure an annual sum of 300,000 francs, which is infinitely less than the enormous estimates required by all the other plans.

### *Death of Professor Poirier.*

Professor Poirier has just died at the age of 51 years. For the last six months he had symptoms which made him fear the presence of gastric cancer, and he had taken gradually increasing quantities of morphine; recently he had been submitted to a "morphia cure" at a private institution, but acute failure of the hepatic and renal functions supervened and he rapidly died in coma. Professor Cornil performed a necropsy and found a small nodule of growth in the head of the pancreas but nothing in the stomach. The late professor succeeded Professor Farabeuf in the chair of Anatomy in the Faculty of Medicine, and he had a brilliant career, successively holding the posts of hospital interne, demonstrator of anatomy, *agrégé* professor, and surgeon to the hospitals; for three years he had been a member of the Academy of Medicine. He was a fine worker and leaves behind him a treatise on anatomy which is an important work. His qualities were brilliant and he was a man of wide acquaintance and of a charming personality. He was a representative member of the French medical deputation which visited London in 1904 and his eloquent speech on the occasion of the luncheon given by the Editors of THE LANCET will be fresh in the minds of those who heard him.

May 6th.

[1] The sum quoted by our correspondent seems surprisingly small.—ED. L.

## BERLIN.

(FROM OUR OWN CORRESPONDENT.)

*The Sanatorium Treatment of Tuberculosis.*

AT a recent meeting of the Society for Social Medicine and Hygiene, Dr. Grotjahn read a paper on the present crisis in the sanatorium movement. Alluding to the fact that the "committee for the erection of sanatoriums" had changed its name to that of "committee for the prevention of tuberculosis," he pointed out that a reaction against the activity formerly shown in establishing sanatoriums for tuberculous patients had now set in. If it was true that the examination and the treatment of such patients which used to take place exclusively in the consulting-room of the physician were carried out more accurately in a sanatorium, the work of the committee must be highly commended, and if the patients either recovered or if their ultimate breaking down in health was deferred for several years the money spent by the Landesversicherungs-Anstalt (invalidity insurance offices), which amounted to 434 marks (about £22) for each patient, was not laid out unprofitably. There were at present in existence 80 public sanatoriums with 7500 beds for consumptives of the working classes, 13 private sanatoriums with 2000 beds, and 13 sanatoriums for children with 500 beds. The statistical returns show, however, that the proportion of recoveries to admissions was 34 per cent. and that 31 per cent. of the patients became permanently disabled after only five years. It was not likely that these small numbers had any influence on the spread of tuberculosis as such. The number of recoveries was the less satisfactory, as only patients in the very first stage of the disease were received in the sanatoriums. Professor Koch has denied the practical value of sanatoriums, as the decrease of the mortality from tuberculosis had begun previously to the establishment of the sanatoriums; this decrease must therefore be attributable to some other cause or causes, such as, for instance, the improvement of the standard of living among the population. The sanatorium system was undeniably attended with certain advantages, one of these being the fact that the tuberculous patients were isolated from the healthy population, but this result ought to be obtainable at a much lower cost than was the case by the methods at present in use. Owing to the fact that the building expenses of the sanatoriums varied from 3000 to 11,000 marks (from £150 to £550) per bed without counting the outlay for rent, measures must be taken to obtain better results at less cost. Dr. Grotjahn recommended the erection of a great number of small asylums distributed through the country so that every town or considerable village should have one asylum. They ought to be furnished as plainly as possible; the patient after admission being not far from his usual place of residence might be able to work and might therefore remain an inmate of the asylum for a long time and even for life. These asylums for tuberculous patients should be fitted up and managed after the pattern of those existing in Norway for the reception of lepers. The Norwegian leper asylums were 20 in number, each containing from 10 to 15 beds; they were situated in country places and the style of living followed in them was similar to that of an ordinary family in moderate circumstances. The inmates of the proposed asylums for tuberculous patients ought to be provided with opportunities for employing themselves in some kind of work, either indoors or outdoors. The asylums should eventually be joined with agricultural colonies, as was the case in some lunatic asylums. The discussion on Dr. Grotjahn's address was postponed and it is expected that the views which he expressed will be combated by the advocates of the sanatorium system.

*Professor von Bergmann's Successor.*

It is announced that Professor Bier of Bonn has been appointed to succeed the late Professor von Bergmann as ordinary professor of surgery and director of the surgical clinic at the University of Berlin. Professor Bier is still a comparatively young man, having been born in 1861. Becoming qualified in 1885 he was for several years assistant to the celebrated Professor von Esmarch of Kiel and when this professor retired Dr. Bier was appointed ordinary professor in the University of Greifswald as the successor of Professor Helferich who had gone to Kiel. In 1903 he left Greifswald for Bonn to replace the late Professor Schede. Professor Bier is known as the discoverer of some important surgical procedures. One of these is the employment of passive congestion, which was devised by him about ten years ago for the treatment of surgical cases of tuberculous disease, and he afterwards made use of it in the treatment of acute inflammation of all kinds. A full account of the method was given by him at the meeting of the German Surgical Congress in 1905,[1] and the innovation was fully approved by the great majority of the surgeons at the Congress held in the following year.[2] Professor Bier is, moreover, the discoverer of anæsthesia by intraspinal injections which has been generally adopted by surgeons. When an appointment to an ordinary professorship in a university has to be made the practice is that the medical faculty of the university in question recommends three candidates to the Government, placing their names in their presumed order of eligibility. In the appointment of a successor to Professor von Bergmann the names proposed to the Government were Professor von Eiselsberg of Vienna, Professor Bier of Bonn, and Professor Garré of Breslau. Professor von Eiselsberg, who is an Austrian and was formerly assistant to the late Professor Billroth, held an ordinary professorship at the University of Königsberg in Germany for several years, but he now declines to leave Vienna. The choice therefore fell on Professor Bier whose appointment will certainly meet with general approval.

May 6th.

## Obituary.

### EDWARD MARKHAM SKERRITT, M.D. LOND., F.R.C.P. LOND.,

SENIOR PHYSICIAN TO THE BRISTOL GENERAL HOSPITAL.

THE news of the death after a few days' illness of Dr. E. Markham Skerritt of Clifton came as a great shock to the large number of his friends and associates in the profession. He had enjoyed an unusual measure of health for many years and lived such an active and yet methodical and careful life that he was regarded as a peculiarly strong man.

Edward Markham Skerritt was born in Chelsea on Dec. 30th, 1848. He was at Mill Hill School for a short time but on his parents removing to Wokingham he was sent to Amersham Hall School, which had just then been moved to Caversham. On leaving school in 1866 he matriculated at the University of London and in October of that year entered for the arts course at University College and graduated B.A. at the University of London in 1868. He then entered the science department of the College and prepared for the Preliminary Scientific M.B., and in 1869 entered the medical department of the College. He graduated M.B., B.S. in 1873 and took the M.D. degree in 1874. Throughout his student course he was distinguished for his strength of character, independence of thought, and methodical habits. He gained many class prizes and distinctions and won the Atkinson-Morley surgical scholarship, a much-coveted honour, and was subsequently elected a Fellow of his College. At the University of London he carried off gold medals in physiology, in medicine, and in obstetric medicine. He obtained the Membership of the Royal College of Physicians of London in 1876 and was elected a Fellow in 1885. In 1897 he was chosen to deliver the Bradshaw lecture. At the time of his death he was a member of the Council of the College.

In 1875, a few months after obtaining his M.D. degree, he was elected a physician to the General Hospital, Bristol, and settled in consulting practice in Clifton. He held this office for 32 years and had been senior physician for many years. He devoted himself to the work of the hospital with his characteristic punctuality, precision, and thoroughness, and from the first the authorities of the hospital, his colleagues, and his students realised that he was a highly gifted physician whose opinion and teaching were of special value and his influence in the hospital was very great and equally beneficial. For many years he lectured in the school, first on pathology and later on medicine; he was dean of the school for a long period and only recently resigned this office. He took a leading part in the negotiations for the union of the medical school with University College, Bristol, and his

[1] THE LANCET, May 27th, 1905, p. 1455.
[2] THE LANCET, May 26th, 1906, p. 1492.

sound judgment, clearness of perception, and firmness and courtesy in discussion were of great service.

Dr. Skerritt threw himself with zest into the work of the local medical societies, regularly attended the meetings, often contributed papers and joined in discussions, and his intervention was always especially welcome as his remarks were the clear expression of well-thought-out conclusions. He had been president of both the Bristol Medico-Chirurgical Society and of the Bath and Bristol branch of the British Medical Association. He was one of the local secretaries when the British Medical Association visited Bristol and the success of the meeting was largely due to his unfailing industry and to his skill in arrangement as well as to his uniform genial courtesy. Of late years he devoted much time to the interests of the British Medical Association; he had held the responsible office of treasurer of the Association and at the time of his death was one of its vice-presidents. He was a very regular attendant at meetings of the council and of various committees, and his opinions carried great weight, for he was eminently wise in counsel. He was a member of the Board of Advanced Medical Studies of the University of London and attended its meetings regularly; his opinion was always highly valued, as he spoke from wide experience and had a breadth of view of professional matters that struck all who served with him on committees.

Dr. Skerritt quickly acquired a considerable practice and for many years he had to limit himself to the work of a consultant, except in the case of a few old patients. Practitioners in Bristol and in an ever-widening area around found him always helpful, considerate, and painstaking. He gained in a remarkable degree the complete confidence of his brethren and of his patients and his removal leaves a correspondingly great sense of loss.

Dr. Skerritt was a keen sportsman; for many years he regularly rode to hounds and spent his summer vacations on Exmoor in order that he might enjoy the stag-hunting. He was an excellent horseman, combining care and courage, and he was always welcome in any hunting field. He was a life-long abstainer from alcohol and tobacco. In the early days of his practice, under the influence of the teaching which he had received at his hospital, he prescribed alcohol to many of his patients, but as his experience increased, we are informed, he ordered it less and less and for many years used it very sparingly indeed.

He had all his life enjoyed robust health and took a keen delight in a simple healthy life, with abundant exercise, and perhaps he had come to regard himself as more than usually capable of resisting ills that were serious to others. Until this winter he had never been known to lie up for illness of any kind, but in November last he was laid aside by an attack of influenza from which he seemed to recover completely. On Sunday, April 21st, he had a slight shiver; unfortunately he continued doing much of his work on the 22nd and 23rd. On Wednesday, the 24th, he was compelled to keep his bed, for his temperature was 105° F.; in the early hours of the 26th he had a very grave attack of palpitation and heart failure; he was then found to have pneumonic consolidation of the left lung. In spite of all that the most devoted and skilful attention could do he succumbed on April 29th, the weakness of his heart being the gravest feature of the illness.

Dr. Skerritt married in 1875 the eldest daughter of Mr. John Heelas, then living at Wokingham, now of Whiteknight's Park, Reading. He had one daughter, who died after a few hours' illness in 1905. He never got over this sorrow; and although he went on with his work and devoted himself with unremitting care to his wife, those most intimate with him realised that the brightness had passed from his life. The funeral took place on May 2nd, amid scenes of the most widespread sympathy and sorrow. The service was held in St. Paul's Church, Clifton, which was thronged with a sorrowing congregation, which included nearly all the medical men in Bristol and many prominent citizens, who thus testified to the respect in which Dr. Skerritt was held. The interment was at the Redland Green Cemetery, at which also a great crowd of sympathetic mourners had gathered.

Dr. Skerritt was no ordinary man. Rather slight in stature and without a particle of self-assertiveness he impressed all who came in contact with him with his force of character, and he equally attracted them by his unfailing geniality and bright humour, which made him always a welcome companion. He had great intellectual gifts; he had trained himself to be methodical, painstaking, and accurate almost to a fault. These qualities made him a skilled physician and a wise counsellor. Beyond that, however, he was a man of sterling uprightness and of unimpeachable sincerity; he was a man to be trusted. But over and above that, behind a nature reserved and shy he hid a heart of the strongest and truest affection, and so it seemed to be a necessity to him to be a friend to all who sought his aid and he ever took a keen pleasure in helping in the best way he knew all who would let him. And so it is that his death is felt in a very wide circle as a loss not only of a clever trusted physician but of a true and wise friend.

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## ROBERT HAMILTON RAMSAY, M.D., C.M. GLASG.

Dr. R. H. Ramsay died at his residence, Duncan House, Torquay, on May 4th, after a short illness from cerebral hæmorrhage. The deceased, who was born in Edinburgh in 1824, was the son of the late Mr. Peter Ramsay, D.L., banker, and the Hon. Susan Hamilton, daughter of Lord Belhaven and Stenton. He was educated at the Universities of Edinburgh and Glasgow and graduated as M.D. and C.M. of the latter university in 1862. At the Glasgow Royal Infirmary he held the appointment of house surgeon to Lord Lister during the period immediately preceding the introduction of antiseptic methods. In 1864 he went to Torquay and in 1865 entered into residence at Duncan House, where he spent the remainder of his life. Passionately fond of horticulture Dr. Ramsay formed at Duncan House one of the most attractive private gardens in the West of England and his fine collection of sub-tropical plants have been much admired; his fan palms from China are the only instances in this country of their ripening seeds in quantity. He had had the honour of receiving Her Majesty Queen Victoria, and the Princesses Louise, Victoria, and Maud, and amongst other distinguished personages who have visited Duncan House have been the Grand Duchess Catherine of Russia and Lord Lytton. For 40 years he held the appointment in Scotland of Purse-bearer to the Lord High Commissioner who represents the Sovereign in the general assembly of the Church of Scotland. Dr. Ramsay was honorary consulting physician to the Erith House Institution, Torquay, for ladies of limited means with diseases of the chest. He had been for 14 years president of the Torquay Gardeners Association and for 30 years was president of the Torquay Football Club. Dr. Ramsay will be much missed in Torquay, where he was one of the oldest and most esteemed of the residents, and his great generosity to the poor will long be held in remembrance.

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## FREDERICK WILLIAM STORRY, M.R.C.S. ENG., L.R.C.P. EDIN.

THE intelligence of the death of Mr. F. W. Storry has been received throughout Stroud and the district with feelings of the greatest sorrow. His health had been indifferent for a considerable time and in the second week of March, accompanied by Mrs. Storry, he proceeded to the Riviera, hoping that complete rest and the warm sunshine would enable him to recuperate. At first he seemed to gain in strength but the improvement was not maintained and on March 31st he passed peacefully away at the Hôtel du Louvre, Mentone, where he was staying.

Mr. Storry was the son of the late Colonel Storry of the Bank, Howden, East Yorkshire, and was born on March 13th, 1856. His professional education was obtained at the Leeds School of Medicine, and he was admitted M.R.C.S. Eng. in 1878, taking the diploma of L.R.C.P. Edin. in 1880. He was house surgeon to the Stroud General Hospital from 1879 until October, 1881, when he resigned to join in partnership the late Dr. G. R. Cubitt of Stroud. A month later he was appointed honorary surgeon to the Stroud General Hospital. In the welfare of this institution he at all times took the keenest interest and at the time of his death he was the senior surgeon. Gifted with a natural enthusiasm for surgery, he was quick to adopt the principles of the aseptic treatment, then in its infancy, and soon gained the well-deserved reputation of being a bold and successful operator. He won the confidence of his patients in a remarkable degree and became one of the busiest and most hard-working practitioners in the district. He was a past President of the Gloucestershire branch of the British Medical Association and a member of the Council at the time of his death.

A man of fine physique and possessed of a genial and hospitable temperament, he had made a wide circle of

friends, by all of whom his untimely death will be long and keenly felt, and the greatest sympathy will be extended to Mrs. Storry and the son and daughter whom he leaves.

The funeral took place at the cemetery at Mentone, a most beautiful spot, and the last resting place of many English who have died away from their native land.

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ROBERT HUGHES, M.D. ST. AND., M.R.C.S. ENG., L.S.A.

Penmaenmawr has just lost one of its most prominent inhabitants in the death of Dr. Robert Hughes, which took place on April 24th. He was well and widely known throughout North Wales. He was a son of the late Mr. Hugh Hughes, quarry proprietor, Trefriw, and was one of four brothers, three of whom were members of the medical profession. He belonged to a literary family and was first cousin of the Rev. Edward Jones, late rector of Llanfaircaereinion, editor of the Llanrwst edition of Goronwy Owen's works, and writer of the brilliant critical essay which forms an introduction to that volume.

Dr. Hughes, who was in his eighty-second year at the time of his death, received his professional education in Dublin. He took the diplomas of L.M. Dub. in 1856, M.R.C.S. Eng. in 1858, and L.S.A. in 1859; in 1862 he graduated as M.D. at the University of St. Andrews. He was appointed surgeon to the Penmaenmawr quarries nearly half a century ago but resigned the appointment when he retired from practice some ten years ago. He had in the prime of life a very extensive and important practice and attended some of the leading men of the age, such as the late Right Hon. W. E. Gladstone, and the late Archbishop Thompson, when staying at Penmaenmawr in the summer season. He was a skilful operator and the author of many literary contributions on various subjects. As a medical man he was looked upon as a leading practitioner in North Wales. It would be impossible to exaggerate the kindness of his heart in dealing with the poor in his profession, but his interest was by no means confined to his calling. He was an ardent Welshman and was possessed of an accurate knowledge of the Welsh language as well as of an extensive acquaintance with Welsh history and Welsh literature. For many years he was a member of the local board of which he filled the posts of chairman and vice-chairman and many years ago occupied the position of President of the North Wales branch of the British Medical Association. He possessed striking individuality of character and formed his views on most subjects independently of party ties and traditions. He was a strong, tender-hearted, cultured, and gifted man and his death will be long and keenly felt by his many friends. The funeral, which took place on April 27th, was a large and representative one and he was laid to rest amidst universal manifestations of sympathy and respect. A large number of beautiful floral tributes were sent from different parts of the country. On the following day the vicar (Rev. Canon Jones) in the course of his sermon made a touching reference to the deceased and paid an eloquent tribute not only to the late Dr. Hughes but to the medical profession in general.

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## THE ROYAL SOCIETY CONVERSAZIONE.

WHEN a council of Britain's leading scientific men decides upon allowing a temporary scaffolding to be erected in its almost sacred meeting room in order to demonstrate an invention it may safely be concluded that there must be something highly important about that invention. This decision had the effect on Wednesday at the conversazione of the Royal Society of directing the attention of the visitors almost exclusively to one exhibit, although the occasion was one on which the exhibits in general were more than usually attractive. The topic of the evening was Mr. Louis Brennan's Mono-railway. In the inventor's own words, each vehicle on this system is provided with automatic stability mechanism which endows it with the power of maintaining its equilibrium upon a single rail either while standing still or travelling at any rate of speed. The mechanism consists of two gyroscopes (or fly-wheels the axis of which can turn in any direction) revolving in opposite directions. The "precession" or top-like motion being accelerated produces a turning couple at right angles to the rail. The principal effect of the gyroscope is that when attached to a moving body it resists change of direction and preserves absolute equilibrium. It would be difficult to enumerate the applications of this principle, but there seems to be little doubt that it will soon be practically demonstrated in regard to railways, motors, flying machines, and other methods of locomotion. Already we know how the gyroscope may be applied for preventing the rolling of ships at sea, and working models were shown in the secretary's room which clearly demonstrated this particular application of this most fascinating principle of mechanics.

Coming to exhibits which more or less relate to medicine in some of its branches we may mention the excellent skiagraphs shown by Dr. Robert Knox and Mr. G. Pearce. The examples illustrated the advantages of reduction in exposure which secures increased definition, and the outlining of the organs while the patient is not submitted to an overdose of the x rays. Close by were some very attractive specimens of pure fused silica ware made at a temperature of 2000° C. in the electric furnace. When polished it shows a beautiful pearl-like lustre and resists the action of extreme changes of temperature, while it threatens to replace platinum in chemical operations since it is unaffected by acids. Mr. W. A. Douglas Rudge's exhibit attracted considerable attention; it was devoted to proving that the action of radium and other salts on gelatine culture medium was purely chemical, a kind of cellular growth apparently forming which, after all, was due to the production of an insoluble precipitate with the sulphuric acid usually present in commercial gelatin. These experiments seem to dispose completely of the idea of "radiobes." Sir James Dewar showed that the motion of the Crookes radiometer was arrested in very high vacua, while Dr. J. T. Bottomley and Mr. F. A. King conducted some beautiful experiments with vacuum gold leaf electroscopes illustrating mechanical temperature effects in rarefied gases. On the middle bench in the library the Hon. C. A. Parsons exhibited some very fine photographs of microscopic diamonds obtained from pure iron heated in a carbon crucible in an electric furnace and rapidly cooled. On the same table Mr. H. B. Fantham exhibited microscopic preparations of *Spirochæta* (trypanosoma) *balbianii* from the crystalline style and intestine of the oyster, while Professor W. B. Bottomley's exhibit dealing with the fixation of nitrogen by leguminous and other plants proved to be very attractive. Plants were shown demonstrating the effect of artificial inoculation. In one experiment on certain soil in which inoculation was adopted the yield of beans, peas, &c., was 12 tons 5 cwt., against 7 tons 1 cwt. when inoculation was not applied.

The Right Honourable the Lord Rayleigh, O.M., D.Sc., D.C.L., the President, received the visitors. The rooms were crowded and presented a most animated scene, but the word "gyroscope" was heard most.

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# Medical News.

UNIVERSITY OF DURHAM (FACULTY OF MEDICINE).—At the Convocation held on April 27th the following degrees and diploma were conferred:—

*Doctor in Medicine.*—Robert Simpson Hindmarch, M.B., B.S. Durh.; Andrew Banks Raffle, M.B., B.S. Durh.; Norcliffe Roberts, M.B., B.S. Durh.; Frederick Riddle Scott, M.B., B.S. Durh.; and Alan Ayre Smith, M.B., B.S. Durh.

*Doctor in Medicine for Practitioners of 15 years' standing.*—Edwin Alfred Bennett, L.R.C.S.E., L.S.A.; Joseph Buck, L.R.C.P. & S.E., L.F.P.S.G.; John Martin Coates Cole, M.R.C.S., L.M., L.K.Q.C.P.I.; Charles Thomas Thornton Comber, M.R.C.S., L.R.C.P.; Alexander Cuffe, F.R.C.S.I., L.A.H.; Harry Legh de Legh, M.R.C.S., L.R.C.P.; William Charles Ellis, L.R.C.P. & S.E., L.F.P.S.G., L.S.A.; Charles Julian Horner, M.R.C.S., L.R.C.P., L.S.A.; Timoth Leahy-Lynch, L.R.C.P. & S.E., L.F.P.S.G.; Thomas McMillan, L.R.C.P. & S., L.F.P.S.G.; Edward Posnett, M.R.C.S., L.R.C.P., L.S.A.; Colamaranacuppi Bangalore Ramarao, B.A., L.M. & S. Madras; Howard Slater, M.R.C.S., L.R.C.P., L.S.A.; Peter Campbell Smith, L.R.C.P. & S., L.F.P.S.G.; David Thomas Wylie, L.R.C.S.I., L.M.

*Bachelor in Medicine (M.B.).*—Harold Henry Blake, St. George's Hospital; Gilbert Iliffe Cumberlege, William Morton Emmerson, L.S.A., and Sydney Havelock, B.Sc., College of Medicine, Newcastle-upon-Tyne; Thomas Davidson Miller, M.R.C.S., L.R.C.P., St. Thomas's Hospital; David Ranken, Howard Bewlay Stephenson, L.R.C.P. & S.E., L.F.P.S.G., Norman Spedding, and Richard Woodward Swayne, College of Medicine, Newcastle-upon-Tyne; and Herbert Hoyle Whaite, L.R.C.P. & S.E., L.F.P.S.G., Birmingham University.

*Bachelor in Surgery* (*B.S.*).—Harold Henry Blake, St. George's Hospital; Gilbert Iliffe Cumberlege, William Morton Emmerson, L.S.A., and Sydney Havelock, B.Sc., College of Medicine, Newcastle-upon-Tyne; Thomas Davidson Miller, M.R.C.S., L.R.C.P., St. Thomas's Hospital; David Ranken, Howard Bewlay Stephenson, L.R.C.P. & S.E., L.F.P.S.G., Norman Spedding, and Richard Woodward Swayne, College of Medicine, Newcastle-upon-Tyne; and Herbert Hoyle Whalte, L.R.C.P. & S.E., L.F.P.S.G., Birmingham University.

*Diploma in Public Health.*—Ernest George Dryden Benson, L.R.C.P. & S.E., L.F.P.S.G.

UNIVERSITY OF LONDON: UNIVERSITY COLLEGE.—A series of lectures and demonstrations was commenced on Wednesday, May 8th, in the physiological department at University College, London, and will be continued on Wednesday afternoons at 5 P.M. The lecturer (Dr. W. Page May) announces his subject as the Arrangement and Functions of Certain Structures in the Central Nervous System, and the syllabus is as follows:—

Lecture 1. May 8th.—On the Peripheral Sensibilities, Spinal Ganglia, and the Commencement of the Afferent Path.
Lecture 2. May 15th.—The Spinal Cord. Its Various Tracts and Centres. Localisation.
Lecture 3. May 22nd.—The Medulla Oblongata.
Lecture 4. May 29th.—The Pons Varolii.
Lecture 5. June 5th.—The Cerebellum. Its Structural Arrangement, Connexions, and Functions.
Lecture 6. June 12th.—The Mid-Brain and Corpora Quadrigemina.
Lecture 7. June 19th.—The Cerebral Cortex. Motor and Sensory Areas and Functions.
Lecture 8. June 26th.—The Integrative Action of the Nervous System. Summary.

The Mercers' Company lectures on the Internal Media of the Body and their Relation to the Tissues will be given in the same department by Professor Ernest H. Starling, F.R.S., on Fridays at 5 P.M., commencing to-day, Friday, May 10th. The following points will be dealt with, according to the published schedule of the lectures:—

1. The watery content of protoplasm and the osmotic relationships of cells.
2. The internal fluid media of metazoa. Coelomic fluid, blood, lymph.
3. The intake of fluid by intestines (and skin).
4. The supply of fluid to the tissues. Lymph and its functions.
5. The production of tissue fluid and lymph.
6. The absorption of tissue fluid and lymph.
7. The output of fluid from the body. The secretion of urine.
8. The regulation of the molecular concentration of the body fluids.
9. The regulation of the total fluid contents of the body under varying conditions, such as bleeding, transfusion, muscular exercise, heart failure, high altitudes, intoxications, &c.

These lectures are open to all students of the London medical schools and to medical men on presentation of their cards.

LONGEVITY.—Mr. James Carne, the parish clerk of St. Columb Minor, Cornwall, celebrated the 101st anniversary of his birthday on May 3rd.—At the last meeting of the Chard (Somerset) board of guardians it was reported that a recipient of outdoor relief had just attained the age of 100 years.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on May 6th, Sir James Crichton-Browne, treasurer and vice-president, being in the chair. Mr. J. H. Morrell, Dr. O. Oberländer, and Mr. F. L. Pattisson were elected members. It was announced that the President had nominated the following vice-presidents for the ensuing year: The Right Hon. Lord Alverstone, G.C.M.G., Sir Benjamin Baker, K.C.B., Dr. Donald W. C. Hood, C.V.O., Sir Andrew Noble, K.C.B., Mr. Alexander Siemens, the Right Hon. Sir James Stirling, Sir James Crichton-Browne (treasurer), and Sir William Crookes (honorary secretary).

THE HEALTH OF THE PEOPLE.—Representatives from more than 30 societies interested in the question of national health were present at a meeting held at the Royal United Service Institution on May 2nd, when the Bishop of Ripon presided. In proposing

That this meeting expresses its sympathy with the efforts now being made to make it illegal for any child under 14 to be taken into, or allowed to enter, a public-house,

the Rev. H. Russell Wakefield said that children must be protected from the ignorance of their parents, while the training and treatment of children in school should be such that when they became parents they in their turn would look after and care for their children in a proper manner. Mrs. Bramwell Booth, who seconded the motion, said that good fathers and mothers could not be made by law, but what the law laid down came at last to be acquiesced in by the masses. The motion having been carried, the chairman, in reply to a vote of thanks, said that legislation on the subject would be valuable because it would set a standard of responsibility before the people and also form an expression of the awakening of the public conscience.

DIPHTHERIA IN TIVERTON.—At the meeting of the Tiverton (Devon) rural district council held on April 24th it was reported that the expenditure in connexion with the recent epidemic of diphtheria in the village of Bradninch amounted to £173. Medical fees amounted to £91 and the cost for the examination of "swabs" was £60.

PRESENTATION TO A MEDICAL PRACTITIONER.—On April 23rd the members of the Weston-super-Mare branch of the St. John Ambulance Brigade presented Mr. Arthur James Cary, L.R.C.S., L.R.C.P. Irel., with a gold-mounted fountain pen in appreciation of his services as honorary lecturer.

AN ELECTRIC MOTOR AMBULANCE SERVICE.—On Monday next, May 13th, Alderman Sir Alfred Newton, chairman of the Police Committee of the Corporation of London, will open an electric motor ambulance service—a circumstance which is of considerable interest to the readers of THE LANCET. The ceremony will take place at 3 P.M., on ground belonging and near to St. Bartholomew's Hospital, the entrance being in King Edward-street, Newgate-street.

HOSPITALS AND THE RATES.—At the annual meeting of the governors of the Alexandra Hospital for Children with Hip Disease, Queen-square, Bloomsbury, London, W.C., held on May 6th, under the presidency of the Duchess of Albany, the Mayor of Holborn, Mr. W. D. Rawlins, K.C., referred to the question of hospitals and the rates. He fully approved of the principle of exempting hospitals from the payment of rates. The matter rested with Parliament, but any measure brought forward would have the full sympathy of his council.

MEDICO-PSYCHOLOGICAL ASSOCIATION.—At a meeting of this association to be held at 11, Chandos-street, W., on May 16th, at 3 P.M., the treasurer will make a short statement on the Workmen's Compensation Act (1906) and move the appointment of a committee to consider the rates proposed to be charged by insurance offices in respect of asylum officers, to collect evidence as to the special risks attaching to service in asylums, and to take such action in making representations as it may think fit. After the meeting members will dine together at the Café Monico, Piccadilly Circus, at 7 P.M., evening dress being optional. Tickets (exclusive of wine), 7*s.* 6*d.*, can be obtained by applying to Dr. C. Hubert Bond, honorary secretary, 11, Chandos-street, W.

TOTTENHAM HOSPITAL.—The opening of the new wards and operating theatre of Tottenham Hospital was performed on May 7th by the Prince of Wales who was accompanied by the Princess of Wales. The Prince also consented, at the request of the governors, to allow the name of the hospital to be changed to "The Prince of Wales's General Hospital, Tottenham." The hospital was established in 1869 and provided 73 beds; at the present time it accommodates 120 beds. The extensions just completed consist of a new wing of three floors, with an operating theatre and adjuncts above. The architects, Messrs. Rowland Plumbe and Harvey, received hearty congratulations on their work, considerable attention being attracted by the fire-resisting materials of which the buildings have been constructed. The rounded angles between the floors and the walls are formed in Diespeker's mosaic and the floors are finished with cement and covered with linoleum. The sanitary spurs to the wards are cut off by means of ventilating corridors which are treated as bridges with ventilating openings over. The wards are heated by means of Teale's stoves and in some cases have radiators intended to be used in extremely cold weather. The operating theatre, the surgeon's room, and the anæsthetising room have marble mosaic floors continued up with rounded skirting around the walls for a height of about 5 feet as a dado. The roof of the theatre is so constructed that the ridge carries the weight, thereby avoiding the use of tie rods that would collect dust. The fittings in the theatre stand in nearly every case quite clear of the walls. The fittings over the sinks are like those at the London Hospital and give hot or cold or tepid water

at will. The theatre is so arranged that the walls and floors can be washed down with a hose.

THE King has sent a present of linen to the Chelsea Hospital for Women.

WESTERN COUNTIES IDIOT ASYLUM, STARCROSS.—The annual report of this institution for the year 1906 shows that the number of patients at the end of the year was 272. During the year 58 cases were admitted, 58 were discharged, and two died. Among the patients there were 15 private cases, the remainder being paupers. The average weekly cost was 11*s.* 9*d.* The Commissioners in Lunacy in their report state "that the success attained by the patients reflects great credit on those who are responsible for their training."

FOLKESTONE BOROUGH COUNCIL AND THE NATIONAL REGISTRATION OF PLUMBERS.—At the last meeting of the Folkestone borough council a letter was read from the Worshipful Company of Plumbers requesting the corporation to appoint a representative to take part in a proposed deputation to the Local Government Board to urge the Government to pass an Act for securing the competency, certification, and registration of plumbers under proper statutory authority. It was resolved:—

That this council approves of the passing of such a Bill and that Alderman Penfold be appointed as the representative of this corporation to take part in the proposed deputation.

THE CHEMISTS' EXHIBITION.—This annual exhibition, which was inaugurated 12 years ago, continues to secure the support of the principal representatives of the drug and allied trades. It enjoys, in fact, a bigger patronage, both in regard to exhibitors and visitors, every succeeding year and the organisers may be congratulated on having set on foot a scheme which has met with such appreciation and success. As was the case last year, the exhibition was held at the Royal Horticultural Hall, Vincent-square, Westminster, and on Monday last Mr. Idris, M.P., declared the exhibition open after making a few suitable remarks in which he pointed out that the scheme was supported, not only by druggists and pharmacists in Great Britain, but by many from the colonies also. On the present occasion there were nearly 100 exhibitors, the result being that there was a good deal that was interesting and instructive to see. Needless to say, the medical profession was well represented amongst the visitors who found presented for inspection many objects of interest connected with medicine and pharmacy. Advances in methods of administration formed a feature of the exhibits and some of the most imposing stalls were reserved for a demonstration of organo-therapeutic products. The exhibition closes to-day (Friday).

WEST AFRICAN MEDICAL SERVICE.—Mr. W. H. Langley, C.M.G., deputy principal medical officer in Northern Nigeria, has been selected for appointment as principal medical officer of the Gold Coast, *vice* Dr. W. R. Henderson, C.M.G., retired. Dr. J. P. Fagan, senior medical officer in Southern Nigeria, has been selected for promotion to deputy principal medical officer in Northern Nigeria. Mr. A. H. Hanley, C.M.G., principal medical officer in Sierra Leone, has retired on pension from Feb. 16th, 1907. Mr. P. M. Forde, senior medical officer in the Gambia, is promoted to be principal medical officer in Sierra Leone. Mr. T. Hood, senior medical officer in Sierra Leone, is transferred to the Gambia. Dr. R. H. Kennan, medical officer in the Gold Coast, is promoted to be senior medical officer in Sierra Leone. Dr. C. R. Chichester, senior medical officer in Southern Nigeria, has been selected for transfer to Northern Nigeria. Dr. St. G. Gray, medical officer in Sierra Leone, has been selected for promotion to senior medical officer in Southern Nigeria on the transfer of Dr. C. R. Chichester. Mr. A. T. Latchmore, medical officer in Sierra Leone, is retired from the service on the ground of ill-health, receiving a gratuity. Dr. A. N. de Gruchey, medical officer in Southern Nigeria, and Dr. J. Tichborne, senior medical officer in Northern Nigeria, are also retired on the ground of ill-health. The following gentlemen have been appointed to the staff, to date from April 27th:—Dr. H. O'H. H. May (Gold Coast), Dr. A. W. Atkinson (Gold Coast), Mr. W. N. Alexander (Sierra Leone), Mr. J. M. O'Brien (Gold Coast), Dr. G. E. H. Le Fanu (Gold Coast), Mr. R. W. Orpen (Sierra Leone), Dr. J. M. W. Pollard (Northern Nigeria), Dr. C. W. McLeay (Northern Nigeria), and Mr. T. M. R. Leonard (Southern Nigeria). The death is reported of Dr. R. E. Little, on March 11th, and of Dr. J. A. Gordon White, on March 16th, both medical officers in Southern Nigeria.

THE HOMES FOR INEBRIATES ASSOCIATION.—The twenty-third annual report of the Dalrymple Home at Rickmansworth, where the work of the Homes for Inebriates Association is carried out under the superintendence of Mr. F. S. D. Hogg, should be an encouraging one for the supporters of the association. Mr. Hogg, while pointing out that he must necessarily lose touch with many of his patients after their discharge, says that during a period of eight years out of 300 patients about 62 per cent. are doing well, 17 per cent. have improved, and 20 per cent. show no improvement. Mr. Hogg, commenting upon the causes of inebriety, makes the interesting remark that the diathesis which is connected with a tendency to indulge in alcohol is more frequently transmitted through the mother, while he also finds that about 60 per cent. of the admissions to the Dalrymple Home state that the origin of their trouble was "sociability and the influence of occupation or of no occupation." Donations and subscriptions may be sent to the chairman, Rev. Canon Duckworth, 6, Little Cloisters, Westminster, London, S.W., or to the secretary, Court Chambers, 173, Marylebone-road, London, W. The accounts show a net profit on the year's working, 1906–07, of £333.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

*Society of Apothecaries of London Bill.*

THE Society of Apothecaries of London Bill has passed its second reading in the House of Commons. It has already passed through all its stages in the House of Lords.

*Royal Army Medical Corps (Volunteers).*

In the annual return on the volunteer corps of Great Britain it is stated that the establishment of the Royal Army Medical Corps (Volunteers) was 3959 on Nov. 1st, 1906. The strength of the corps at the same date was 3649 of all ranks and this total is made up of 125 officers and 3432 non-commissioned officers and men along with 92 non-efficients.

*The Royal Sanitary Institute.*

The Royal Sanitary Institute has petitioned the House of Commons in favour of the Butter and Margarine Bill, the Infant Life Protection Bill, the Public Health Bill, and the Public Health (Regulations as to Food) Bill.

## HOUSE OF COMMONS.

WEDNESDAY, MAY 1ST.

*Emigrants and Vaccination.*

Mr. BOWLES asked the President of the Board of Trade whether he was aware that, in a circular issued by the Emigrants Information Office, intending emigrants to Canada were informed that if they travelled to Canada as steerage passengers they would be required, on arrival, either to produce a vaccination certificate or to submit to vaccination or to compulsory detention for observation in a quarantine station, while if they travelled otherwise than by steerage no such requirements would be made; and whether this was a correct statement of the Canadian regulations on the subject.—Mr. CHURCHILL (who replied) said: The statement in question is substantially correct, though the words "Passengers other than steerage are not examined" might be qualified by adding the words "as a rule."

*The Royal Commission on Vivisection.*

Sir PHILIP MAGNUS asked the Secretary of State for the Home Department whether he could state when the Royal Commission on Experiments on Living Animals for the purposes of Research was likely to report.—Mr. GLADSTONE answered: The inquiry is not sufficiently advanced to enable an answer to be given to this question.

*The Chief Medical Officer of the Post Office.*

Mr. HUNT asked the Postmaster-General whether he would explain why the salary of the chief medical officer of the Post Office had been raised from a maximum of £1000 per annum, with an allowance of £100 per annum, to a salary of £1200 per annum, seeing that before the Select Committee on Post Office Wages the chief medical officer admitted that he received salaries from two other institutions for medical attendance.—Mr. SYDNEY BUXTON furnished the following written reply: The salary of the chief medical officer has been raised because it was considered that as it formerly stood it did not afford adequate remuneration for the duties of the post. A proposal for this increase was first made to the Treasury in 1903. It was renewed and agreed to in February, 1906. I understand that when the chief medical officer was appointed to his present post he received permission to continue to hold the two appointments referred to, which do not interfere with the performance of his official duties.

*Public Health in Egypt.*

Dr. RUTHERFORD had several questions on the notice paper relating to such matters as the stagnant residue in the bed of the Ismailia

Canal and the drainage and sewage in the villages and towns of Egypt.—Sir EDWARD GREY said: The questions put by the honourable Member relate to questions of Egyptian internal administration. And while I have every desire to encourage sanitary reform I must point out that this is one of the matters which receive constant attention from the Egyptian Government and that the direct interference of His Majesty's Government in matters of administrative detail is both impracticable and undesirable. As the honourable Member is no doubt aware, the progress of social reform in every country must be gradual and particular measures must depend upon the resources of the State.

*Medical Officers in County Kerry.*

In answer to MR. THOMAS O'DONNELL, MR. BIRRELL wrote: The salaries paid to medical officers in the unions of the county Kerry for the years ended March, 1897, and March, 1906, are as follows:—

| | Year 1897. | Year 1906. |
|---|---|---|
| Cahirciveen ... ... ... ... ... | £440 | £514 |
| Dingle ... ... ... ... ... | 540 | 552 |
| Kenmare ... ... ... ... ... | 440 | 440 |
| Killarney ... ... ... ... ... | 703 | 730 |
| Listowel ... ... ... ... ... | 600 | 722 |
| Tralee ... ... ... ... ... | 755 | 785 |

One-half of the amounts in the first column was recouped from the Parliamentary grant. Of the sums of £730 and £785 given in the second column, one-half was in each case recouped from the Local Taxation Account and in the remaining cases the amount recouped was a little less than one-half, owing to the limitation imposed by Section 6 (1) of the Local Government (Ireland) Act, 1902. In the year ended March, 1906, the following additional payments were made for remuneration of substitutes for medical officers who were absent on vacation, and recoupment of one-half of these amounts was allowed under Section 5 (1) of the Act of 1902:—

| | £ | s. | d. |
|---|---|---|---|
| Cahirciveen ... ... ... ... ... ... | 42 | 0 | 0 |
| Dingle ... ... ... ... ... ... | 8 | 8 | 0 |
| Kenmare ... ... ... ... ... ... | 50 | 8 | 0 |
| Killarney ... ... ... ... ... ... | 29 | 0 | 0 |
| Listowel ... ... ... ... ... ... | 134 | 8 | 0 |
| Tralee ... ... ... ... ... ... | 100 | 16 | 0 |

The balance remaining in all the cases referred to above was defrayed out of the rates. It may be added that no portion of the agricultural grant is directly payable to relieve any specific union charge but is applied in aid of the rates on agricultural land generally.

*The Maintenance of Lunatics.*

MR. WILLIAM PEARCE asked the President of the Local Government Board whether he would introduce legislation extending the grant of 4s. weekly now made under the Local Government Act, 1888, in respect of each lunatic maintained in a lunatic asylum, to imbeciles and lunatics certified for treatment in workhouses.—MR. JOHN BURNS answered: Some extension of the grant in the direction desired was recommended by the Royal Commission on Local Taxation, subject to certain conditions. The matter will receive consideration when the question of local taxation is dealt with by the Government, but I could not promise to introduce legislation with regard to it at the present time.

*Medical Supplies for Irish Guardians.*

In the course of the debate in Committee of Supply on the Vote for the Irish Local Government Board,

MR. BOLAND called attention to the contracts which Irish boards of guardians and other authorities made for supplies, including the supply of medicines for workhouses. Some of these boards had tried to encourage Irish industries by accepting tenders for supplies which were not always the lowest. He contended that it should not be in the power of the Local Government Board auditor to upset the tender although it was not the lowest sent in.

MR. BIRRELL, in the course of his reply, said that with regard to medical supplies it had to be remembered that under Acts of Parliament half the cost of the drugs that were supplied to workhouses by boards of guardians in Ireland was repaid out of Imperial funds. Therefore Parliament had an interest in seeing that extravagant prices were not paid for drugs and medical supplies. Because boards of guardians got half the cost back there was not the same check that the ratepayers would get value for their money. It had been brought to the notice of the Local Government Board that boards of guardians preferred to buy the drugs from Irish firms, forgetting the fact that drugs were sent from every part of the world. The firms in Ireland who supplied them were only middlemen. In the case of drugs and medical supplies therefore it was necessary that the Local Government Board for Ireland should take a more strict view than in the case of other supplies. He did not think that the Local Government Board should relax its hold over boards of guardians. They did require to be looked after because of the fact that, although they were acting in a spirit of friendliness, acts of irregularity had not only been alleged but had been proved against them. He did not say that these were cases of dishonesty, but they were cases of favouritism, which cast a burden on the ratepayers. That ought not to be the case and whoever had control of the Irish Local Government Board would be playing an unpatriotic part if they did not maintain a sharp control over boards of guardians in all parts of the country. If this was done he was sure that in a few years a proper spirit would be developed in these bodies.

MR. HUGH T. BARRIE did not think that there was any more important contract accepted by boards of guardians than the contract for medical supplies. It was extremely important that the drugs should come from really responsible firms. However, he believed that firms in Belfast would certainly compete with any wholesale drug firms, either in Liverpool or in London. He thought that the practice in England had been to accept the lowest tender, because there was the safeguard that the medical officer would see that the guardians received what they had contracted to get. He thought that the Chief Secretary to the Lord Lieutenant had taken up a proper attitude in this important matter.

The subject then dropped and the vote was ultimately agreed to.

MONDAY, MAY 6TH.

*The Board of Education and a Medical Department.*

MR. WEDGWOOD asked the President of the Board of Education on what expert opinion Clause 10 of the Education (Administrative Provisions) Bill was drafted; and whether this expert opinion reported as well upon the necessity of establishing a permanent medical department at the Board of Education, and, if so, what their view of such a medical department was.—MR. MCKENNA answered: Clause 10 of the Administrative Provisions Bill follows precisely the wording of the similar clause of last year's Bill as amended in Parliament. A considerable volume of expert opinion bearing on the subject will be found in the reports of the Inter-Departmental Committees on Physical Deterioration and on the medical inspection and feeding of school children which have been already published. I do not think the matters referred to in the last paragraph can be adequately dealt with by means of question and answer. There will be an opportunity for discussing them in committee on the Bill.

TUESDAY, MAY 7TH.

*Declarations under the Vaccination Bill.*

MR. DUNDAS WHITE asked the President of the Local Government Board whether it was intended that any, and, if so, what, fees shall be chargeable by commissioners of oaths and other officers in respect of declarations made under the recently introduced measure dealing with vaccination; and whether he would consider the desirability of inserting in the Bill an express provision with regard to this.—MR. JOHN BURNS replied: The provisions of the existing law with regard to fees in respect of the statutory declarations will apply to declarations for the purposes of the Bill. Where a statutory declaration is made before a commissioner for oaths the fee is 1s. 6d. As regards fees payable when a declaration is made before a justice or magistrate the charge in the metropolitan police-courts is 1s., while elsewhere it depends on the table of justices' clerk's fees in force whether any, and, if so, what, fee is payable. In the model table of fees issued by the Secretary of State the suggested fee for a declaration is 1s. I may add that a fee of 1s. 6d. or 2s. is payable now in most cases where a certificate of conscientious objection is obtained under Section 2 of the Vaccination Act, 1898.

WEDNESDAY, MAY 8TH.

*Marriage and the Transmission of Disease.*

Captain FABER asked the Prime Minister whether his attention had been called to the fact that several State legislatures in America had passed Bills to prevent marriages taking place unless both parties were, in the opinion of a qualified physician, free from disease transmissible to their children; and whether he would consider the desirability of introducing a similar Bill here.—Sir HENRY CAMPBELL BANNERMAN answered: I do not propose to undertake legislation on this subject this session.

## BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent Garden, London, W.C.

Treatment by Hypnotism and Suggestion, or Psycho-Therapeutics. By C. Lloyd Tuckey, M.D. Aberd., late Visiting Physician to Margaret-street Infirmary; Membre Fondateur de la Société d'Hypnologie; Honorary Member of the American Society for the Study and Cure of Inebriety; President of the Medical Society for the Study of Therapeutic Suggestion. Fifth edition, revised, and enlarged. With an Introductory Chapter, by Sir Francis R. Cruise, M.D., D.L., K.S.G., Honorary Physician to the King in Ireland. Price 10s. 6d. net.

CHURCHILL, J. AND A., 7, Great Marlborough-street, London, W.

The Book of Receipts (Beasley). Re-written by E. W. Lucas, F.I.C., F.C.S. Eleventh edition. Price 7s. 6d. net.

Une Méthode Simple pour l'Analyse de l'Eau. Spécialement recommandée aux Officiers Médicaux du Service Sanitaire. Par John C. Thresh, M.D. Vict., D.Sc. Lond., D.P.H. Camb., Lecteur et Examinateur de l'Université de Londres. Traduction sur la Cinquième Édition Anglaise (1904). Par MM. les Dr. Magnier, Interne à l'Asile de Maréville et Thiry, G., Chef du Laboratorie de Bactérologie des Cliniques de l'Université de Nancy. Price not stated.

CLARENDON PRESS, Oxford.

The Imperial Gazetteer of India. The Indian Empire. Vol. I., Descriptive. Vol. IV., Administrative. New Edition. Published under the Authority of His Majesty's Secretary of State for India in Council. Subscription price for the entire work of 26 volumes, bound in cloth, £5 net; or with morocco back, £8 8s. net. Each of the four volumes of "The Indian Empire" sold separately at 6s. net each, in cloth, or 7s. 6d. net., with morocco back.

FISCHER, GUSTAV, Jena.

Die Blutsaugenden Dipteren. Leitfaden zur allgemeinen Orientierung mit besonderer Berücksichtigung der in den Deutschen Kolonien lebenden Krankheitsüberträger. Von Dr. Karl Grünberg, Assistent am Zoologischen Museum zu Berlin. Price M.4.50.

Praktikum der Bakteriologie und Protozoologie. Von Dr. Karl Kisskalt, Privatdozent Oberassistent am hygien. Institut der Universität Berlin und Privatdozent der Zoologie an der Universität und wiss. Hilfsarbeiter am Kgl. Institut für Infektionskrankheiten in Berlin. Price M.4.50; geb., M.5.50.

Uber Form und Lage des Magens unter normalen und abnormen Bedingungen. Von Dr. M. Simmonds, Prosektor am Allg. Krankenhause Hamburg St. Georg. Price M.3.

Surgical Pathology and Morbid Anatomy. By Anthony A. Bowlby, C.M.G., F.R.C.S., Surgeon to St. Bartholomew's Hospital and to the Household of His Majesty the King. Fifth edition. Edited with the assistance of Dr. F. W. Andrewes, Lecturer on Pathology at St. Bartholomew's Hospital. Price 10s. 6d. net.

HODDER AND STOUGHTON, Warwick-square, London, E.C.

Diseases of the Nose and Throat. By J. Bruce Ferguson, M.D., Instructor in Diseases of the Nose and Throat in the Post-Graduate Medical School and Hospital, New York. (The Medical Epitome Series. Edited by Victor Cox Pedersen, A.M., M.D.) Price 4s. net.

# Appointments.

*Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to* THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week such information for gratuitous publication.*

DEVANE, J. F., M.B., D.P.H., has been appointed Assistant House Surgeon at the Huddersfield Infirmary.

FRENCH, J. GAY, M.B., B.S. Lond., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Surgeon to the Ear and Throat Department, with Charge of Out-Patients, at the Great Northern Central Hospital.

GILBERT, WILLIAM, M.B., Ch.B. Glasg., has been appointed Assistant House Surgeon at the Huddersfield Infirmary.

HERTZ, A. F., M.B., B.S. Oxon., has been appointed Assistant Physician to Guy's Hospital.

JORDAN, ALFRED C., M.D., B.C. Cantab., has been appointed Medical Radiographer to Guy's Hospital.

MURRAY, H. LEITH, M.D. Aberd., has been appointed Joint Pathologist to the David Lewis Northern Hospital, Liverpool.

REITH, W. R., M.D., M.S. Aberd., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Erdington District of the county of Warwick.

SHAW, LAURISTON E., M.D. Lond., F.R.C.P. Lond., has been appointed Physician to Guy's Hospital.

SYMES, J. O., M.D. Lond., D.P.H., M.R.C.S., L.R.C.P. Lond., has been appointed Consulting Physician to the Cossham Memorial Hospital, Kingswood, Bristol.

TAYLOR, FREDERICK, M.D. Lond., F.R.C.P. Lond., has been appointed Consulting Physician to Guy's Hospital.

WHITEHOUSE, A. LANDON, M.R.C.S., L.R.C.P., L.D.S. Eng., has been appointed Honorary Curator of the Museum, Royal Dental Hospital of London.

# Vacancies.

*For further information regarding each vacancy reference should be made to the advertisement (see Index).*

ARMY MEDICAL SERVICE.—Examination for Thirty Commissions in the Royal Army Medical Corps.

BATH, BAILBROOK HOUSE.—Assistant Medical Officer. Salary £140 per annum, with board, lodging, laundry, and attendance.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Senior and Junior Resident Medical Officers for six months. Honorarium at the rate of £20 and £10 a year respectively, with board and lodging.

BRENTFORD UNION WORKHOUSE AND SCHOOLS, Isleworth, W.—Second Assistant Medical Officer, unmarried. Salary £125 per annum, with lunch and tea daily and dinner when on late duty.

BRIGHTON, SUSSEX COUNTY HOSPITAL.—House Physician, unmarried. Salary £80 per annum, with board, residence, and washing.

BURY ST. EDMUNDS, WEST SUFFOLK GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and lodging.

CANCER HOSPITAL, Fulham-road, London, S.W.—House Surgeon.

CANTERBURY CITY ASYLUM.—Assistant Medical Officer, unmarried. Salary £140 per annum, with board, apartments, and laundry.

CARMARTHEN, JOINT COUNTIES LUNATIC ASYLUM.—Medical Superintendent. Salary £450 per annum, with house, fire, light, and washing. Also Assistant Medical Officer. Salary £200 per annum, with board, lodging, washing, and attendance.

CHELTENHAM GENERAL HOSPITAL.—House Physician, also Surgeon-in-Charge of Branch Dispensary, both unmarried. Salary of former £85 and of latter £90 per annum, with board and lodging.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL AND DISPENSARY.—Junior House Surgeon. Salary £80 a year, with board, apartments, and laundress.

CUCKFIELD UNION.—Medical Officers for Districts No. 2, No. 6, and No. 7. Salaries £50, £40, and £100 per annum respectively and extra medical fees.

DOUGLAS, ISLE OF MAN, NOBLE'S ISLE OF MAN HOSPITAL AND DISPENSARY.—Resident House Surgeon, unmarried. Salary £90 a year, with board and washing.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—House Surgeon and Assistant House Surgeon. Salaries £80 and £25 respectively, with board and lodging.

EASTERN DISPENSARY, Leman-street, Whitechapel, E.—Surgeon. Salary £50 per annum.

ESSEX AND COLCHESTER GENERAL HOSPITAL.—House Surgeon. Salary £80 per annum, with board, washing, and residence.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, S.E.—House Physician, House Surgeon, and Assistant House Surgeon. Salary of two former £80 and of latter £70 per annum, with board, residence, and washing.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Assistant House Surgeon, unmarried. Salary £60 per annum, with board, lodging, and washing.

GLOUCESTER, GENERAL INFIRMARY AND GLOUCESTERSHIRE EYE INSTITUTION.—Assistant House Surgeon for six months. Salary at rate of £30 per annum, with board, residence, and washing.

GORDON HOSPITAL, Vauxhall Bridge-road, S.W.—Resident House Surgeon.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—Assistant House Surgeon. Salary £50 per annum, with board, residence, and laundry.

GUY'S HOSPITAL DENTAL SCHOOL.—Travelling Scholarship. Value £100.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, unmarried, for six months. Salary £20, with board and residence.

KENSINGTON GENERAL HOSPITAL, Earl's Court, London, S.W.—Assistant Surgeon.

KENSINGTON WORKHOUSE AND INFIRMARY.—Second Assistant Resident Medical Officer. Salary £100 per annum, with apartments, board, and washing.

LAMBETH PARISH INFIRMARY, Brook-street, Kennington-road, S.E.—Clinical Assistant for six months. Salary at rate of £100 per annum, with residential allowances.

LIVERPOOL STANLEY HOSPITAL.—Junior House Surgeon. Salary £70 per annum, with board, residence, and washing.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN, 8, Hunter-street, W.C.—Second Demonstrator of Anatomy (female).

MAIDSTONE, WEST KENT GENERAL HOSPITAL.—Assistant House Surgeon and Anæsthetist, unmarried. Salary £80, with board, lodging, and washing.

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES.—House Surgeon. Salary £75 per annum, with board and residence.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Surgeon. Also Assistant Surgeon.

MIDDLESEX HOSPITAL.—Medical Officer and Registrar to the Cancer Department. Salary £100 per annum, with board and lodging.

MILLER HOSPITAL, Greenwich-road, S.E.—Junior House Surgeon. Salary at rate of £30 per annum, with board, attendance, and washing.

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—Junior Resident Medical Officer. Salary £70 per annum, with board, residence, and laundry.

NORTHAMPTON, BERRY WOOD ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £150, increasing to £200, with board, lodging, washing, and attendance.

NORTH-EASTERN HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Medical Officer in Charge of Electrical Department. Salary £50 per annum.

PADDINGTON INFIRMARY AND WORKHOUSE.—First Assistant to the Medical Superintendent of the Infirmary and Assistant Medical Officer of the Workhouse. Salary £120 per annum, rising to £150 per annum, with board, lodging, and washing.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Hunterian Professor, Arris and Gale Lecturer, and Erasmus Wilson Lecturer; also Jacksonian and Cartwright Prizes.

ROYAL EAR HOSPITAL, Dean-street, Soho, W.—House Surgeon for six months. Salary at rate of £40 per annum.

ROYAL EYE HOSPITAL, Southwark, S.E.—House Surgeon. Salary £52 10s. per annum, with board and residence.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Assistant to the Clinical Pathologist and Assistant Anæsthetists (females).

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, S.E.—Junior Resident Medical Officer. Salary at rate of £40 per annum, with board and washing.

ST. BARTHOLOMEW'S HOSPITAL.—Assistant Physician-Accoucheur, Assistant Surgeon, and Assistant Aural Surgeon.

ST. MARK'S HOSPITAL FOR FISTULA AND OTHER DISEASES OF THE RECTUM, City-road, E.C.—House Surgeon. Salary £80 per annum, with board, lodging, and washing.

ST. MARY'S HOSPITAL, Paddington, W.—Physician in Charge of Out-Patients.

ST. THOMAS'S HOSPITAL.—Assistant Physician.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Junior House Surgeon. Salary £80 per annum, with board, residence, and laundry.

SWANSEA GENERAL AND EYE HOSPITAL.—House Surgeon. Salary £75 per annum.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician for six months. Honorarium of £30, with board and lodging.

WARWICK COUNTY LUNATIC ASYLUM, Hatton, Warwick.—Junior Assistant Medical Officer. Salary £130, with board, lodging, and washing.

WEST BROMWICH DISTRICT HOSPITAL.—Resident Assistant House Surgeon, unmarried. Salary £75 per annum, with board, residence, and washing.

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, &c., 73, Welbeck-street, London, W.—Resident House Physician and Medical Registrar. Salary at rate of 50 guineas per annum, with board, washing, and attendance.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY.—Junior House Surgeon. Salary £100, with apartments, washing, and rations.

WORCESTER GENERAL INFIRMARY.—House Physician. Salary £80 per annum, with board and residence.

# Births, Marriages, and Deaths.

## BIRTHS.

BARNICOT.—On May 4th, at 40, Queen-street, Hitchin, Herts, the wife of J. Barnicot, M.D., of a son.

DUNNETT.—On May 5th, at Ascott-avenue, Ealing, Agnes Dunnett, M.B. Lond., wife of Lionel Francis Dunnett, of a daughter.

HEGGS.—On April 30th, at Toronto House, West Bromwich, the wife of Raymond Mitchell Heggs, L.R.C.P. Lond., M.R.C.S., of a son.

## MARRIAGE.

DE VOSS—KANTHACK.—On May 8th, at the German Church, Montpelier-place, Brompton-road, S.W., Gustav de Voss, of 5, Bichen Strasse, Gross Flottbek, Holstein, Germany, to Emilia Victoria, daughter of Emilio Kanthack, of Sherborne, Mortlake-road, Kew Gardens.

## DEATHS.

ABBOTT.—On May 4th, at Killiney House, Killiney, Arthur J. Abbott, M.D. T.C.D., second son of Rev. Dr. Abbott, S.F. T.C.D., aged 41.

MACARTNEY.—At 18, Newton-place, Glasgow, on 5th inst., Jessie Jane Logan, wife of Dr. Duncan Macartney.

MACDONALD.—On May 3rd, at Stornoway, Lewis, Donald J. MacDonald, M.B., C.M., D.P.H. Aberd., J.P.

*N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Short Comments, and Answers to Correspondents.

## "THE ANTI-OPIUM REMEDY."

FURTHER particulars of "the anti-opium remedy" are quoted in the *Pharmaceutical Journal* from the *Journal of the Federated Malay States Museums* for December, 1906. The history of the discovery of the plant *Combretum sundaicum* and the reason for roasting it previously to use is as follows. A party of Chinese wood-cutters, working in the jungle near Seremban, ran out of tea and to supply its place took the leaves of a jungle climber, dried them, and made an infusion in the usual way. This substitute was not found to be successful, as it produced bowel complaint among the men. It was found, however, that the leaves on being roasted formed a fair substitute for tea and produced no ill-effects. Then for some obscure reason kengko—i.e., opium dross or the refuse opium after being smoked—was mixed with it and the men continued to drink the infusion prepared from the mixture for a week or more in place of tea. After this time it was found that all desire for opium smoking had been lost. The news of the discovery then spread with great rapidity and others were induced to try the remedy. In preparing the drug for use care is taken to separate the leaves from the stems and to roast them separately, in order to avoid undue heating of the leaves. A decoction is prepared by boiling from eight to 11 ounces of the roasted stems and leaves in four gallons of water for about three hours, and straining the liquid into a barrel. No preservative is used, so that the decoction is very subject to fermentation, and fresh supplies have to be obtained frequently. It is stated that a Chinese opium smoker consumes from 116 to 175 grains of opium daily, although in one case as much as 875 grains form the daily allowance. The opium is less potent than the B.P. extract of opium and a considerable quantity of the alkaloids present are destroyed during the process of smoking, so that only a small portion is absorbed into the system of the smoker. If a man has been in the habit of smoking 116 grains of opium per day then that quantity of opium is roasted in the same way as it would be if prepared for smoking and placed in a bottle containing 25 fluid ounces of the decoction. Then a dose of three fluid ounces is taken by the patient, after which three fluid ounces of the simple decoction of the anti-opium plant are transferred to this bottle from another bottle containing 25 fluid ounces of the liquid. This is repeated each time a dose is taken until the bottle of simple decoction is finished. The dose is taken as many times a day as the patient has been in the habit of smoking, usually three or four times, until both bottles are finished, when the patient should no longer desire to smoke opium. If he is not cured the treatment is repeated, with a smaller initial proportion of burnt opium, the amount being still further decreased if a third course should be necessary. Mr. L. Wray, I.S.O., the author of the article, states that generally three courses are required.

## DIAGNOSIS IN EXCELSIS.

*To the Editors of* THE LANCET.

SIRS,—A patient of mine, a fine healthy man with no family history of consumption, has recently suffered from severe attacks of asthma. Previous to this he was a great athlete. Last year he consulted Sir Sydney Jones, who, after a very long and careful examination, said, "I can find nothing wrong except a slight trace of asthma on the right side." I have examined him frequently with the same result. Two months ago he had occasion to consult one of the leading registered dentists in Sydney who said, "By the appearance of the gums of one of your teeth I should say you were developing consumption." Is this Sherlock Holmes or what? I am, Sirs, yours faithfully,

April 2nd, 1907. MEDICUS.

*** Let us hope that the patient reported his dentist's words incorrectly.—ED. L.

## HOSPITAL ABUSE: A SUGGESTED REMEDY.

A CORRESPONDENT whose position as a member of one of the public services precludes him from signing his name has written to us. He says that his letter is of "a somewhat polemical nature," and we agree with him so far. We cannot endorse all that he says, but undoubtedly some of his forcible statements have a ground in fact. He considers that there are two main causes of hospital abuse—the one being the number of salaried officials of hospitals whose interest it is to make the work of a hospital appear as far-reaching as possible, and the other the fact that the medical and surgical members of hospital staffs, although by words opposed to hospital abuse, are not so in practice. His first complaint is not borne out by facts, while a more jealous eye than the public and perhaps many members of the medical profession are aware of is kept over hospital expenditure. With regard to the second matter, he points out that it is in the power of the medical staffs of hospitals to effect the necessary reforms if they presented a solid front. "If the hospital staffs of all London," he suggests, "said collectively to their governors, 'We demand that our expenditure of time, labour, and skill, which are absolutely indispensable to the working of the hospitals, and of far greater value to the hospitals than your contributions, be recognised by giving each one of us a voice in the control of the hospital, or we shall unanimously resign,' this most just demand would have to be at once conceded." He points out that the general practitioner is the greatest sufferer from hospital abuse and suggests the following remedy. "The general practitioner must combine and say effectively to the member of the hospital staff, 'I will not send you another case till the abuse at your hospital is rectified'"; and he calls upon the British Medical Association to provide the means and the organisation for carrying out this scheme.

The question of hospital abuse teems with difficulties and our correspondent's statement of the evils and suggestions for their removal are of too sweeping a nature. His letter was prompted by the recent discussion on hospital abuse at the Westminster branch of the British Medical Association. The sense of this meeting was in favour of a central hospital board, a remedy which he does not consider drastic enough. But the perfect combinations which he postulates among general practitioners and among hospital staffs have yet to be arrived at. As many have said, hospital abuse is mainly an expression of a want of organisation and of coincidence of opinion among medical men themselves. And no amount of organisation will ever get all medical men to think alike upon the subject. The letter from which we have quoted is at least an honest expression of opinion from a medical man who is neither a general practitioner nor a hospital medical officer. He is therefore presumably unbiased.

## A NEGLECTED TEXT.

*To the Editors of* THE LANCET.

SIRS,—Heaven forbid that I should add to a controversy which suffers from being conducted upon a subject where no absolutely certain evidence can be adduced by either side and which might be made interminably long by honest opponents for just this reason. Not even the total prohibitionist is more aware of the evils caused by alcohol than is the moderate user of alcohol. And whereas the prohibitionist, looking at good work done by users of alcohol, can say that the work might have been still better if its author had been a teetotaller, it is equally open to the user of alcohol to say that many an active prohibitionist would have been a still more valuable citizen if he had taken an occasional glass of wine. Neither can be contradicted.

I am writing not to expound such obviousness but to wonder why the following text has been so neglected in all the tons of correspondence upon the alcohol question. The views of David and Timothy are constantly quoted but never this striking sentence: "And the trees said unto the vine, Come thou, and reign over us. And the vine said unto them, Should I leave my wine, *which cheereth God and man*, and go to wave to and fro over the trees?" (Judges ix. 13, revised version). I am, Sirs, yours faithfully,

M.D.

## THE GOLDEN FLEECE.

A PAMPHLET bearing the above title on the cover has been sent to us with a request for a review. It bears the further title, "A New Medical Statement upon Alcohol: Analysis and Counter Statement," and comprises the opinion of the British Temperance League with regard to the recent pronouncement upon alcoholic beverages which appeared in our columns above the signatures of 16 well-known medical men. There is nothing in the pamphlet to review. We are sure that the advocates of temperance tenets are sincere in their beliefs, but once again they show that they cannot credit their opponents with an equal desire to speak the truth. The origin of the "manifesto," as the collective opinion of the writers is termed, is attributed in this pamphlet to a writer who "did political work for the 'Moderates' at the recent London County Council election, the 'Moderates' being the party which had the support of the liquor and betting interests." We are accused quite untruthfully of sending out advance copies of THE LANCET containing the pronouncement, and the intellects of the signatories are impeached on the score of their age. This sort of thing is rudeness, not analysis, and does the cause of temperance real harm.

## WHITSUNTIDE ON THE CONTINENT.

RETURN tickets at reduced fares available for eight days will be issued to Brussels from May 15th to 18th and 20th, *viâ* Harwich and Antwerp. Passengers leaving London in the evening reach Brussels next morning after a night's rest on board the steamer. For visiting The Hague, Scheveningen (the Dutch Brighton), and Amsterdam for the old world cities of the Zuyder Zee, and the International Exhibition at Mannheim, special facilities are offered *viâ* the Great Eastern Railway Company's British Royal Mail Harwich-Hook of Holland route. A corridor train with vestibuled carriages, dining and breakfast cars, is run on the Hook of Holland service between London and Harwich. From the Hook of Holland through carriages and restaurant cars are run in the North and South German express trains to Cologne, Basle, and Berlin, reaching Cologne at noon, Basle and Berlin in the evening. For the convenience of passengers tickets dated in advance can be obtained at the Liverpool-street Station Continental Enquiry and Booking Offices. The Danish Royal Mail steamers of the Forenede Line of Copenhagen will leave Harwich for Esbjerg (on the west coast of Denmark) on May 16th and 18th, returning on May 21st and 22nd. The General Steam Navigation Company's steamers will leave Harwich on May 15th and 18th for Hamburg, returning on May 19th and 22nd.

### HOW INFECTION IS SPREAD.

THE risks to which the community is liable from the negligence of persons suffering from infectious diseases were illustrated at Todmorden recently, where the father of a lad suffering from scarlet fever has been fined for his negligence. The proceedings were taken at the instigation of the medical officer of health who had been informed by neighbours of the lad that he had been associating with the general public. The lad himself confessed that he had been to a football match and mixed with other boys. An epidemic of scarlet fever has lately prevailed in the Cornholme part of Todmorden and since the police-court proceedings 24 cases have been notified.

### WANTED—A HOME.

*To the Editors of* THE LANCET.

SIRS,—I should be glad if any of your readers could tell me of a home (private or otherwise) where an old lady suffering from aneuryam of the aorta and practically bed-ridden could be taken care of. She is prepared to pay £1 a week. Thanking you in anticipation,

I am, Sirs, yours faithfully,

53, Bromley-common, Kent, May 4th, 1907. J. H. YOLLAND.

### CYDER.

IN an analytical notice in THE LANCET of April 27th, p. 1170, of Messrs. William Gaymer's Norfolk cyder we omitted to add that the samples were found to be entirely free from objectionable preservatives. Considering how commonly cyder is preserved with salicylic acid we print this addendum with pleasure.

### A NEW FORM OF DEEP-SOLED BOOT.

*To the Editors of* THE LANCET.

SIRS,—I should like to call attention to an invention which appears to me to be of some importance. In cases of hip disease in which there has been shortening and a boot with a deep sole has to be worn the resulting limp appears to be largely increased by the shortening of the step on the diseased side. This is produced by the comparative immobility of the ankle on the thick sole which prevents the natural bend as the body comes forward over the supporting foot. A remedy for this defect is provided by a surgical boot invented by Mr. Fageant, bootmaker, of 48, Richmond-road, Kingston-on-Thames. The foot of this boot is moveable on the sole at the junction of the anterior and middle thirds and the movement is restricted to an up-and-down one by a guide which at its greatest flexion remains over the sides of the heel. The result of the use of the boot is a considerable diminution of the limp, practically in some cases abolishing it, and the patient walks longer distances with no greater fatigue. The cost is about the same as that of other surgical boots and I feel sure that many people whose only sign of past ill-health is a limp will welcome the invention.

I am, Sirs, yours faithfully,

ROGER N. GOODMAN.

Kingston-hill, Kingston-on-Thames, April 24th, 1907.

*** We have examined the boot to which Mr. Goodman refers and agree with him that the idea is a good one.—ED. L.

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*Ship Surgeon.*—Our correspondent will possibly find all the information which he seeks in the following work: "The Ship Surgeon's Pocket Book and Medical Officer's Log," by W. B. Dawson, formerly Admiralty Surgeon. London: Baillière, Tindall, and Cox. 1905. Price 2s. 6d.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

## METEOROLOGICAL READINGS.

*(Taken daily at 8.30 a.m. by Steward's Instruments.)*

THE LANCET Office, May 9th, 1907.

| Date. | | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Rainfall. | Solar Radia in Vacuo. | Maximum Temp. Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| May | 3 | 29·46 | W. | 0·04 | 101 | 56 | 44 | 45 | 49 | Cloudy |
| ,, | 4 | 29·59 | W. | 0·09 | 113 | 61 | 45 | 45 | 49 | Cloudy |
| ,, | 5 | 29·53 | E. | ... | 104 | 61 | 45 | 47 | 50 | Overcast |
| ,, | 6 | 29·63 | S.E. | 0·01 | 114 | 72 | 50 | 54 | 56 | Fine |
| ,, | 7 | 29·68 | S.W. | ... | 76 | 58 | 53 | 51 | 56 | Cloudy |
| ,, | 8 | 29·87 | S.W. | 0·40 | 116 | 65 | 49 | 52 | 58 | Fine |
| ,, | 9 | 29·87 | S.W. | 0·24 | 76 | 64 | 49 | 50 | 52 | Raining |

**During the week marked copies of the following newspapers have been received:**—*Yorkshire Evening Post, Standard, Daily News, Daily Chronicle, Belfast News, Tribune, Hull Eastern Morning News, Hampstead Express, South London Press, Morning Post, Preston Guardian, Durham Chronicle, Daily Express, Glasgow Herald, Scotsman, Wimbledon Gazette, Broad Arrow, Army and Navy Gazette, Literary Digest (New York), &c.*

# Medical Diary for the ensuing Week.

## OPERATIONS.

### METROPOLITAN HOSPITALS.

**MONDAY (13th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (3 P.M.), St. Mark's (2.30 P.M.).

**TUESDAY (14th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (2 P.M., Ophthalmic, 2.15 P.M.), Tottenham (2.30 P.M.).

**WEDNESDAY (15th).**—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.).

**THURSDAY (16th).**—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.). Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (2.30 P.M.), Tottenham (Gynæcological, 2.30 P.M.).

**FRIDAY (17th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.).

**SATURDAY (18th).**—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

## SOCIETIES.

**MONDAY (13th).**—MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8 P.M.: General Meeting. Election of Officers and Council, &c. 8.30 P.M.: Papers:—Dr. H. Mackenzie: Mobility of the Kidneys.—Dr. W. Broadbent: Some Heart Affections with Murmurs.

**TUESDAY (14th).**—ROYAL MEDICAL AND CHIRURGICAL SOCIETY (20, Hanover-square, W.).—8.30 P.M.: Mr. E. M. Corner: Fractures of the Odontoid Process of the Axis (epidiascope demonstration).

**WEDNESDAY (15th).**—ROYAL MICROSCOPICAL SOCIETY (20, Hanover-square, W.).—8 P.M.: Exhibition of Pond Life. Papers:—Prof. A. W. Porter and Mr. P. F. Everitt: Diffraction Rings due to a Circular Aperture.—Mr. E. M. Nelson: An Improved Vertical Illuminator.

SOCIETY OF ARTS (John-street, Adelphi, W.C.).—8 P.M.: Dr. H. W. G. Macleod: Trypanosomiasis or Sleeping Sickness.

**THURSDAY (16th).**—MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND (11, Chandos-street, Cavendish-square, W.).—3 P.M.: Papers:—Dr. W. F. Robertson and Dr. G. D. McRae: Further Bacteriological and Experimental Investigations into the Pathology of General Paralysis.—Dr. H. Devine: A Case of Katatonia in a Congenital Deaf-Mute.

**FRIDAY (17th).**—SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN (11, Chandos-street, Cavendish-square, W.).—5 P.M.: Wightman Lecture:—Dr. F. Taylor: Pneumonia in Children.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

**MONDAY (13th).**—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—12 noon: Pathological Demonstration:—Dr. Low. 2 P.M.: Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eye. 2.30 P.M.: Operations. 5 P.M.: Lecture:—Major L. Rogers, I.M.S.: The Clinical Diagnosis of Fevers in the Tropics (illustrated by lantern slides).

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. A. Whitfield: Clinique. (Skin.) 5.15 P.M.: Lecture.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—Cliniques:—9.30 A.M.: Surgical Out-patient (Mr. H. Evans). 2.30 P.M.: Medical Out-patient (Dr. Whipham), Throat, Nose, and Ear (Mr. Carson); X Ray (Dr. Pirie).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.15 P.M.: Sir Dyce Duckworth: Medicine. 2.30 P.M.: Operations. 3.15 P.M.: Mr. W. Turner: Surgery. 4 P.M.: Dr. StClair Thomson: Diseases of the Throat, Nose, and Ear. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

**TUESDAY** (14th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith road, W.).—10 A.M.: Dr. Moullin: Gynæcological Operations. 2 P.M.: Medical and Surgical Clinics. X Rays. Dr. Ball: Diseases of the Throat, Nose, and Ear. 2.30 P.M.: Operations. Dr. Abraham: Diseases of the Skin. 5 P.M.: Clinical Lecture:—Mr. Paget.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. R. Cautley: Clinique. (Medical.) 5.15 P.M.: Lecture:—Dr. W. S. A. Griffith: The Arrest of Uterine Hæmorrhage under Various Conditions.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—Cliniques:—10.30 A.M.: Medical Out-patient (Dr. Auld). 2.30 P.M.: Gynæcological Out-patient (Dr. Giles), Surgical Out-patient (Mr. Edmunds). Surgical Operations (Mr. Carson). 3.30 P.M.: Demonstration of Cases at Colney Hatch Asylum (Dr. H. Corner).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.15 P.M.: Dr. R. T. Hewlett: Medicine. 2.30 P.M.: Operations. 3.15 P.M.: Mr. Carless: Surgery. 4 P.M.: Mr. M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin. Special Lecture:—Mr. Carless.

CENERAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—3.45 P.M.: Demonstration:—Mr. Stuart-Low: Middle Ear and Labyrinth.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Dr. Beevor: Muscular Atrophy.

**WEDNESDAY** (15th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Ball: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 2 P.M.: Medical and Surgical Clinics. X Rays. 2.30 P.M.: Operations. 5 P.M.: Lecture:—Mr. Pardoe: Hæmaturia.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. M. Collier: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Mr. B. Harman: Injuries to the Superficies of the Eye.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—Cliniques:—2.30 P.M.: Skin (Dr. Meachen), Eye (Mr. Brooks), Medical Out-patient (Dr. Whipham).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.15 P.M.: Dr. F. Taylor: Medicine. 2.30 P.M.: Operations. 3.30 P.M.: Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

**THURSDAY** (16th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M.: Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eye. 2.30 P.M.: Operations. 5 P.M.: Lecture:—Mr. Keetley: Cases of Interest in the Wards.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Mr. M. Yearsley: Syphilis in the Ear.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—2.30 P.M.: Gynæcological Operations (Dr. Giles). Cliniques:—Medical Out-patient (Dr. Whiting), Surgical Out-patient (Mr. Carson). 3 P.M.: Medical In-patient (Dr. Chappel). 4.30 P.M.: Special Demonstration of Surgical Cases (Mr. W. Edmunds).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. G. Rankin: Medicine. 3.15 P.M.: Sir W. Bennett: Surgery. 4 P.M.: Mr. M. Davidson: Radiography. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

CHARING CROSS HOSPITAL.—4 P.M.: Dr. Eden: Demonstration (Gynæcological). (Post-Graduate Course.)

HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M.: Lecture:—Mr. G. E. Waugh: Hip Disease in Children.

**FRIDAY** (17th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Moullin: Gynæcological Operations. 2 P.M.: Medical and Surgical Clinics. Dr. Ball: Diseases of the Throat, Nose, and Ear. X Rays. 2.30 P.M.: Operations. Dr. Abraham: Diseases of the Skin. 5 P.M.: Lecture:—Dr. S. Taylor: Pneumonia.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. W. Stuart-Low: Clinique. (Ear.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—9.30 A.M.: Clinique:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M.: Surgical Operations (Mr. Edmunds). Cliniques:—Medical Out-patient (Dr. Auld), Eye (Mr. Brooks). 3 P.M.: Medical In-patient (Dr. Leslie).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.15 P.M.: Dr. R. Bradford: Medicine. 2.30 P.M.: Operations. 3.15 P.M.: Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin. Special Lecture:—Dr. R. Bradford: Jaundice.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Dr. Beevor: Bulbar Paralysis.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—3.45 P.M.: Demonstration: Mr. Stuart-Low: Middle Ear and Labyrinth.

**SATURDAY** (18th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Ball: Diseases of the Throat, Nose, and Ear. 2 P.M.: Medical and Surgical Clinics. X Rays. 2.30 P.M.: Operations.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich.)—2.30 P.M.: Operations. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

## EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

*It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.*

*Lectures, original articles, and reports should be written on one side of the paper only,* AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

*Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.*

*We cannot prescribe or recommend practitioners.*

*Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."*

*Letters relating to the publication, sale and advertising departments of* THE LANCET *should be addressed "To the Manager."*

*We cannot undertake to return MSS. not used.*

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## Communications, Letters, &c., have been received from—

A.—Dr. H. K. Abbott, Fareham; Messrs. Aked and Aked, Lond.; Mr. E. Arnold, Lond.; All-India Hospital Assistants' Association, Parel, Secretary of.

B.—Sir Edward Buck, Lond.; Mr. W. E. Boulter, Plumstead; Mr. W. Bevan-Lewis, Wakefield; Dr. W. Cecil Bosanquet, Lond.; Mr. S. H. Benson, Lond.; Mr. W. Bryce, Edinburgh; Messrs. Barclay, Perkins, and Co., Lond.; Messrs. Burroughs, Wellcome, and Co., Lond.; Bridgwater Hospital, Secretary of; Berrow's Worcester Journal Co., Worcester; Dr. F. Bryan, Buxton; Mr. A. E. Blades, Leicester; Mr. L. Bottomley, Ashton-under-Lyne.

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